LIST OF EFFECTIVE PAGES

Chapter 57
WINGS

CHAPTER	PAGE	DATE	CODE
*57	i	Sep. 17/62	AB-2
*57	ii	Sep. 17/62	AB-1
*57	1	Sep. 17/62	AB-2
*57	2	Sep. 17/62	AB-2
*57-0	1	Sep. 17/62	AB-2
57-0	2	Aug. 30/61	AB-1
*57-0	201	Sep. 17/62	AB-2
57-0	202	Aug. 30/61	AB-1
*57-0	203	Sep. 17/62	AB-2
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57-1-0	1	Aug. 30/61	AB-1
57-1-0	2	Aug. 30/61	AB-1
57-1-0	3	Aug. 30/61	AB-1
57-1-0	4	Aug. 30/61	AB-1
57-1-0	5	Aug. 30/61	AB-1
57-1-0	6	Aug. 30/61	AB-1
57-1-0	7	Aug. 30/61	AB-1
57-1-0	8	Aug. 30/61	AB-1
57-1-0	9	Aug. 30/61	AB-1
57-1-0	10	Aug. 30/61	AB-1
57-1-0	11	Aug. 30/61	AB-1
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57-1-0	201	Aug. 30/61	AB-1
57-1-0	202	Aug. 30/61	AB-1
57-1-0	203	Aug. 30/61	AB-1
57-1-0	204	Aug. 30/61	AB-1
57-1-0	205	Aug. 30/61	AB-1
57-1-0	206	Aug. 30/61	AB-1
57-1-0	207	Aug. 30/61	AB-1
57-1-0	208	Aug. 30/61	AB-1
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*57-2-0	3	Sep. 17/62	AB-2
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*57-2-1	202	Sep. 17/62	AB-2
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*57-2-1	204	Sep. 17/62	AB-2
*57-2-1	205	Sep. 17/62	AB-2
*57-2-1	206	Sep. 17/62	AB-2
*57-2-2	201	Sep. 17/62	AB-2
*57-2-2	202	Sep. 17/62	AB-2
*57-2-2	203	Sep. 17/62	AB-2
*57-2-2	204	Sep. 17/62	AB-2
*57-2-2	205	Sep. 17/62	AB-2
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*57-2-3	205	Sep. 17/62	AB-2
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57-2-5	201	Aug. 30/61	AB-1
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57-3-0	2	Aug. 30/61	AB-1
57-4-0	1	Aug. 30/61	AB-1
57-4-0	2	Aug. 30/61	AB-1
57-4-0	201	Aug. 30/61	AB-1
57-4-0	202	Aug. 30/61	AB-1
57-4-0	203	Aug. 30/61	AB-1
57-4-0	204	Aug. 30/61	AB-1
57-5-0	1	Aug. 30/61	AB-1
57-5-0	2	Aug. 30/61	AB-1
57-5-0	201	Aug. 30/61	AB-1
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57-6-0	2	Aug. 30/61	AB-1
57-6-0	201	Aug. 30/61	AB-1
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57-7-0	1	Aug. 30/61	AB-1

*Pages revised, added or deleted by this revision.
#Applicable to Group I Airplanes only. Refer to Manual INTRODUCTION for Explanation of Group Designations.

LIST OF EFFECTIVE PAGES (CONT)

CHAPTER	PAGE	DATE	CODE
*57-7-0	2	Sep. 17/62	AB-2
57-7-0	201	Aug. 30/61	AB-1
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57-8-0	202	Aug. 30/61	AB-1
57-8-0	203	Aug. 30/61	AB-1
57-8-0	204	Aug. 30/61	AB-1
57-8-0	205	Aug. 30/61	AB-1
57-8-0	206	Aug. 30/61	AB-1

Chapter 57
WINGS

TABLE OF CONTENTS

CHAPTER SECTION	SUBJECT	PAGE
57-0	WINGS	
	General	1
	Inspection/Check	201
	Cleaning/Painting	203
	Approved Repairs	203
57-1-0	WING INTERSPAR ASSEMBLY	
	General	1
	Wing Spars	4
	Interspar Bulkheads	5
	Plate-Stringer Skin Panels	7
	Interspar Access Openings	8
	Fuel-Tighting	9
	General	201
	Blow-Back Air Test	201
	Approved Repairs	201
57-2-0	WING LEADING EDGES	
	General	1
	Leading Edge Structure	1
	Anti-Icing Air Distribution	1
	Removal/Installation	201
	Inspection/Check	201
	Cleaning/Painting	201
	Approved Repairs	201
57-2-1	WING INBOARD LEADING EDGE	
	Removal/Installation	201
57-2-2	WING INTERMEDIATE LEADING EDGE	
	Removal/Installation	201
57-2-3	WING OUTBOARD LEADING EDGE	
	Removal/Installation	201
#57-2-4	LEADING EDGE SLATS	
	General	1
	Structure	1
	Anti-Icing Airflow	1
	Removal/Installation	201
	Inspection/Check	201

#Applicable to Group I Airplanes only. Refer to Manual INTRODUCTION for Explanation of Group Designations.

TABLE OF CONTENTS (CONT)

CHAPTER SECTION	SUBJECT	PAGE
57-2-5	LEADING EDGE FLAPS	
	General	1
	Structure	1
	Removal/Installation	201
	Inspection/Check	201
57-3-0	WING TRAILING EDGE	
	General	1
57-4-0	WING TIPS	
	General	1
	Structure	1
	Removal/Installation	201
	Inspection/Check	204
57-5-0	AILERONS	
	General	1
	Structure	1
	Removal/Installation	201
	Inspection/Check	201
57-6-0	SPOILERS	
	General	1
	Structure	1
	Removal/Installation	201
	Inspection/Check	201
57-7-0	WING FLAPS	
	General	1
	Structure	1
	Removal/Installation	201
	Inspection/Check	201
57-8-0	ANTI-SHOCK BODIES	
	General	1
	Structure	1
	Removal/Installation	201
	Inspection/Check	206

Chapter 57

WINGS - DESCRIPTION AND OPERATION

1. General

The wing is an all metal, full-cantilever, three-spar assembly (see Figure 1), consisting of an interspar assembly, a landing gear beam, leading edges with thermal anti-icing ducts, leading edge flaps, a trailing edge section and anti-shock bodies. The trailing edge section includes the ailerons, spoilers and flaps. The interspar assembly supports the four turbojet engine pods and pylons and is the primary bending and shear structure of the wing.

Two main attach fittings at each wing front and rear spar connect the wings to the fuselage, and transfer fuselage load to the wings; multiple dagger-type splices between the wing center section tie-box and the fuselage belt-frames above the wing aid in load transfer from the fuselage to the wings. Chordwise drag angles splice the fuselage skin to the upper and lower wing surfaces.

Each wing is divided into four integral fuel-tight compartments - two main fuel tanks and two replenishment fuel tanks. The front and rear spars form the forward and aft tank walls. The upper and lower wing skins form the top and bottom surfaces of the fuel tanks. The wing center spar divides the inboard replenishment and inboard main fuel tank. A fuel-tight bulkhead at wing station 224 separates the inboard replenishment and inboard main fuel tanks from the outboard main fuel tank. Another fuel-tight bulkhead at center spar station 557 separates the outboard replenishment tank from the outboard main fuel tanks. Each tank is completely accessible through access doors in the wing lower surface.

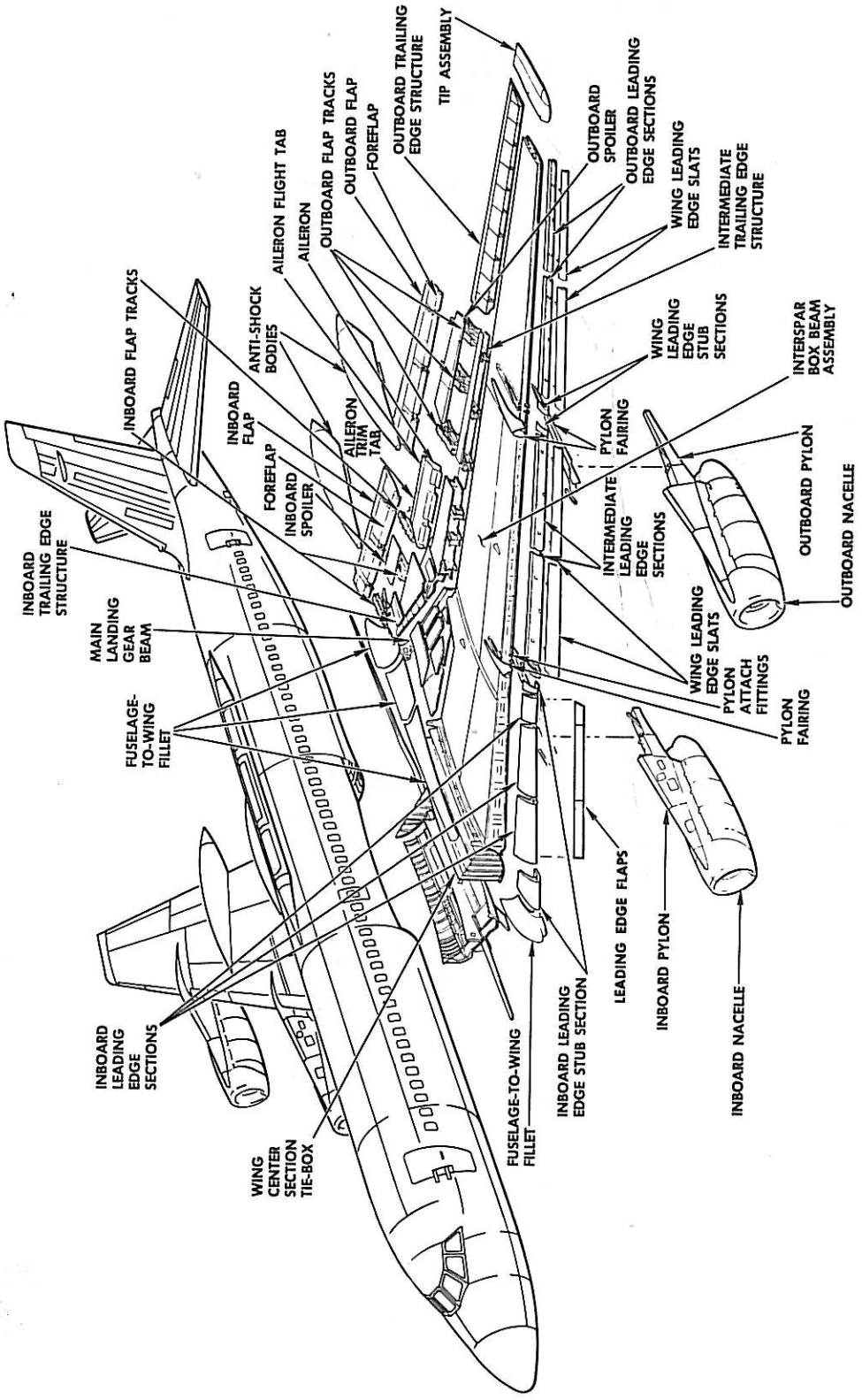
Cured Scotchweld tape on component faying surfaces seals the interspar assembly, and makes it fuel-tight. The entire interspar assembly, except for the region adjacent to the wing centerline splice (wing station 0.0), is sealed in this manner.

An auxiliary tank with five fuel-tight cells is located in the wing center section between the front and rear spars; inboard of No. 1 bulkhead of the left and right wings.

Two anti-shock bodies are located on the upper surface of each wing parallel to the fuselage. The inboard anti-shock body is located at wing station 204, the outboard anti-shock body is located at wing station 407. Scotchweld process is also used in construction of the anti-shock body.

*Leading edge flaps are installed on the lower surface of the leading edge section of each wing.

*Applicable to Group II Airplanes: Refer to Manual INTRODUCTION for Explanation of Group Designations.



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Wing Components
Figure 1

1. Inspection/Check

A. General.

Prior to opening the wing interspar assembly for inspection/check, the fuel tanks must be inerted. (Refer to Chapter 28, FUEL.) Use only vapor proof lights for fuel tank illumination. Electrical power equipment must not be used. Never work alone in fuel tank; maintain constant communication with someone outside. Guard against scratching or damaging the Scotchweld primed surfaces in the wing interspar assembly.

B. Access and Preparation.

(1) Lower flaps and raise spoilers. Install 22J 115 spoiler actuator lock, or equivalent, at each pair of spoiler actuators.

(2) Extend leading edge flaps.

(3) Remove fuselage-to-wing fairing panels.

(4) Open inboard and intermediate leading edges: Remove wing tip and outboard leading edge. Remove rear baffles from each of the leading edge sections.

(5) Remove leading edge pylon fairings at attachment to wing.

(6) Remove access panel in the wing rear spar in left wheel well for access to the wing center section tie-box.

(7) Remove access panels in lower surface of wing.

(8) Open or remove trailing edge access doors and panels.

(9) Open forward cargo compartment door and access panels at the aft end of the forward cargo compartment.

(10) Open fuselage trim panels in the overwing area of the passenger compartment as required.

C. Check the following:

(1) Forward face of the wing front spar, passing through the fuselage for cracks, corrosion, and loose fasteners.

NOTE: Gain access through zippered partition at aft end of the forward cargo compartment.

(2) Fuselage and wing structure under fuselage-to-wing fairing panels. Check main attach fittings at the wing front and rear spars for cracks, corrosion, and loose fasteners. Check dagger fittings and attachment to the fuselage beltframes, and the fuselage skin drag tees for cracks and loose fasteners.

(3) Inboard leading edge stub section and fuselage-to-wing fairing formers for cracks, corrosion, and loose fasteners. In addition, check fuselage skin and pressure seals inside fairing areas for condition.

(4) Wheel well interior for cracks, corrosion, and loose fasteners. Check main landing gear side brace and trunnion fittings for attachment and condition.

(5) Main landing gear beam for deformation, cracks, and loose fasteners. Check attachment to wing rear spar and to fuselage.

(6) Wing center section tie-box for fuel leaks, condition, cracks, and loose fasteners. Pay particular attention to the wing-fuselage attach daggers and the fuel-tight bulkheads at wing station 69, left and right, for fuel leaks, cracks, and loose fasteners. Check wing station 0.0 splice.

(7) Leading edge exterior skins and internal structure for general condition. Check leading edge inner skins, ribs, and forward baffles for cracks, corrosion, and loose fasteners. Check anti-ice ducts for security of attachment.

(8) Forward side of the wing front spar for fuel leaks, cracks, corrosion, and loose fasteners. Check areas adjacent to the wing spar splices, wing station 69 and 224. Check bleed air manifold, engine control cable, and wiring support bracketry for security of attachment.

(9) Interspar assembly upper and lower skins for cracks, corrosion, fuel leaks, and loose fasteners. Pay particular attention to pylon fitting rivet patterns and the chordwise skin splices at wing station 69, 224 and center spar station 557. In addition, check the interspar assembly outboard closing rib for fuel leaks, cracks, corrosion, and loose fasteners.

(10) Interspar assembly interior including the wing center spar for cracks, deteriorated sealant, and loose fasteners. Pay particular attention to the wing spars in areas of pylon and control surface attachments, and to the bulkheads at wing splices, wing station 69, 224, and center spar station 557.

(11) Interspar assembly stringers and clips for cracks and loose fasteners. In addition, check access opening doublers for cracks, loose fasteners, and damaged fuel-tight dome nuts.

(12) Aft side of the wing rear spar for fuel leaks, cracks, corrosion, and loose fasteners. Pay particular attention to the spar splices at wing station 69 and 224. In addition, check hydraulic lines, wiring, control cables, and torque tubes for security of attachment.

(13) Trailing edge structure for cracks, corrosion, and loose fasteners. Check the aileron hinge supports and flap tracks for condition and security of attachment.

(14) Aileron, aileron flight tab, and trim tab structure for cracks, corrosion, and loose fasteners. Pay particular attention to the control surface hinges and control rod attachments. In addition, check balance board curtains and restrictors for condition and security of attachment.

(15) Flap structure and carriages for cracks, corrosion, and loose fasteners. Check carriages and fore flap sections for security of attachment.

(16) Spoilers for cracks, corrosion, loose fasteners, and security of attachment.

(17) Wing tip for cracks, corrosion, loose fasteners, and security of attachment.

(18) Leading edge flap structure and torque tube drive assembly for cracks, corrosion, loose fasteners, and security of attachment.

2. Cleaning/Painting

A. Keep all structure free from contaminants or materials that could damage metals. Clean off all such substances in accordance with Chapter 51, STRUCTURES - GENERAL.

B. Paint all surfaces requiring touch-up or major finish repairs in accordance with Chapter 51, STRUCTURES - GENERAL.

3. Approved Repairs

Replace or repair damaged sealants as directed in Chapter 51, STRUCTURES - GENERAL.

WING INTERSPAR ASSEMBLY - DESCRIPTION AND OPERATION

1. General

The wing interspar assembly (see Figure 1) is the primary load carrying structure of the wing. It consists of a left and right box-beam section joined at the fuselage centerline (wing station 0.0) by a wing center section tie-box (see Figure 2). Three main spars and four center section auxiliary spars along with bulkheads and plate-stringer skin panels constitute the major interspar assembly structure.

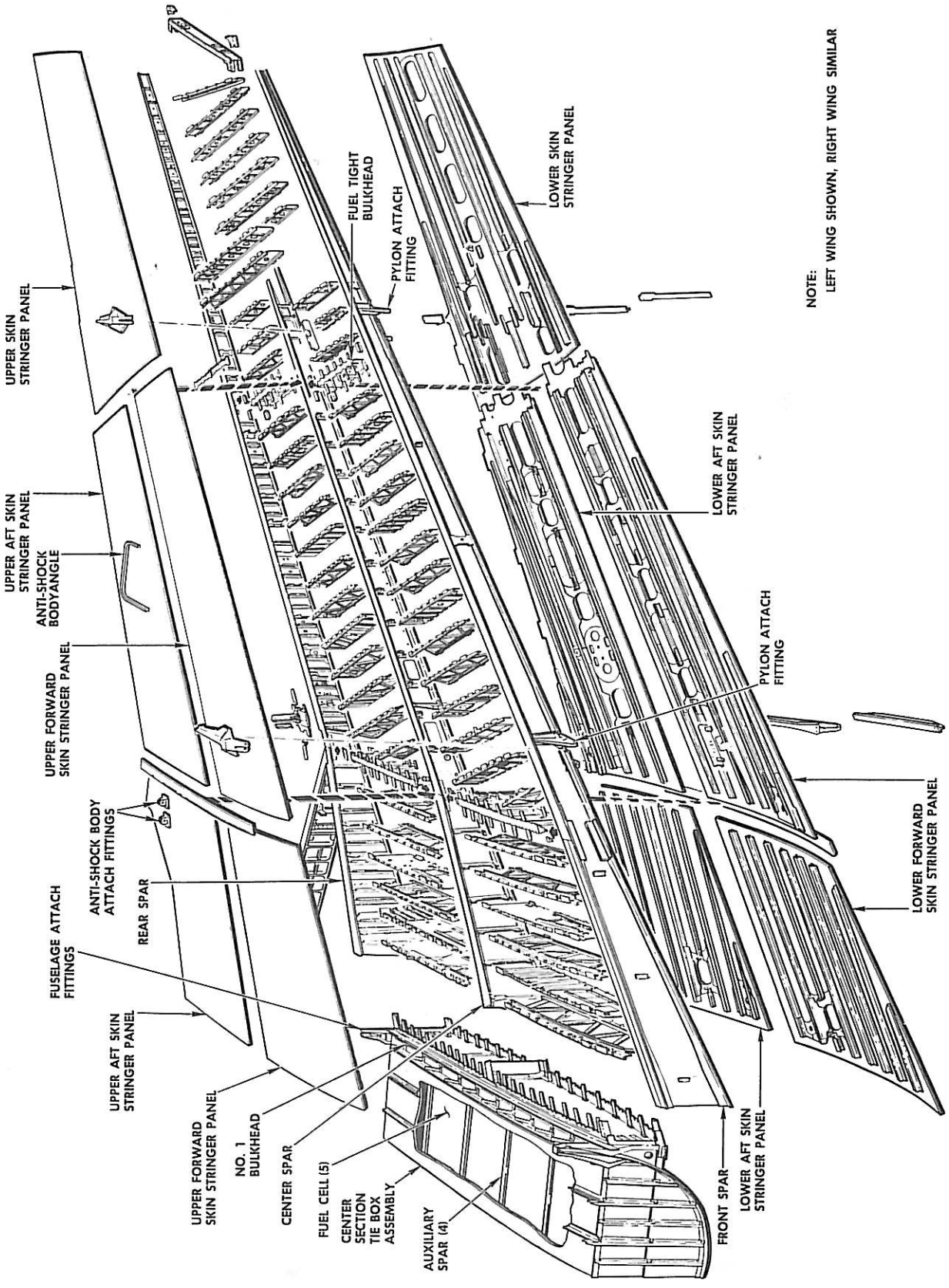
The left and right box-beam sections are of three-spar construction from the fuselage (wing station 69, left and right) to the outboard side of the outboard pylon location (center spar station 623). The center spar terminates at this point, and two spar construction continues from there to the tip of the interspar assembly (wing station 688). Stringers splice into the outboard end of the center spar and continue the remaining distance to the tip.

The wing center section tie-box is the middle portion of the wing which extends through the fuselage between wing station 69 on the left and right sides of the fuselage. Through this section the wing front and rear spars are parallel and at a 90 degree angle to the airplane longitudinal axis. The center spar carries through the tie-box area in the form of reinforced stringers. Four auxiliary spars, at approximately equal chordwise intervals, are incorporated between the front and rear spars.

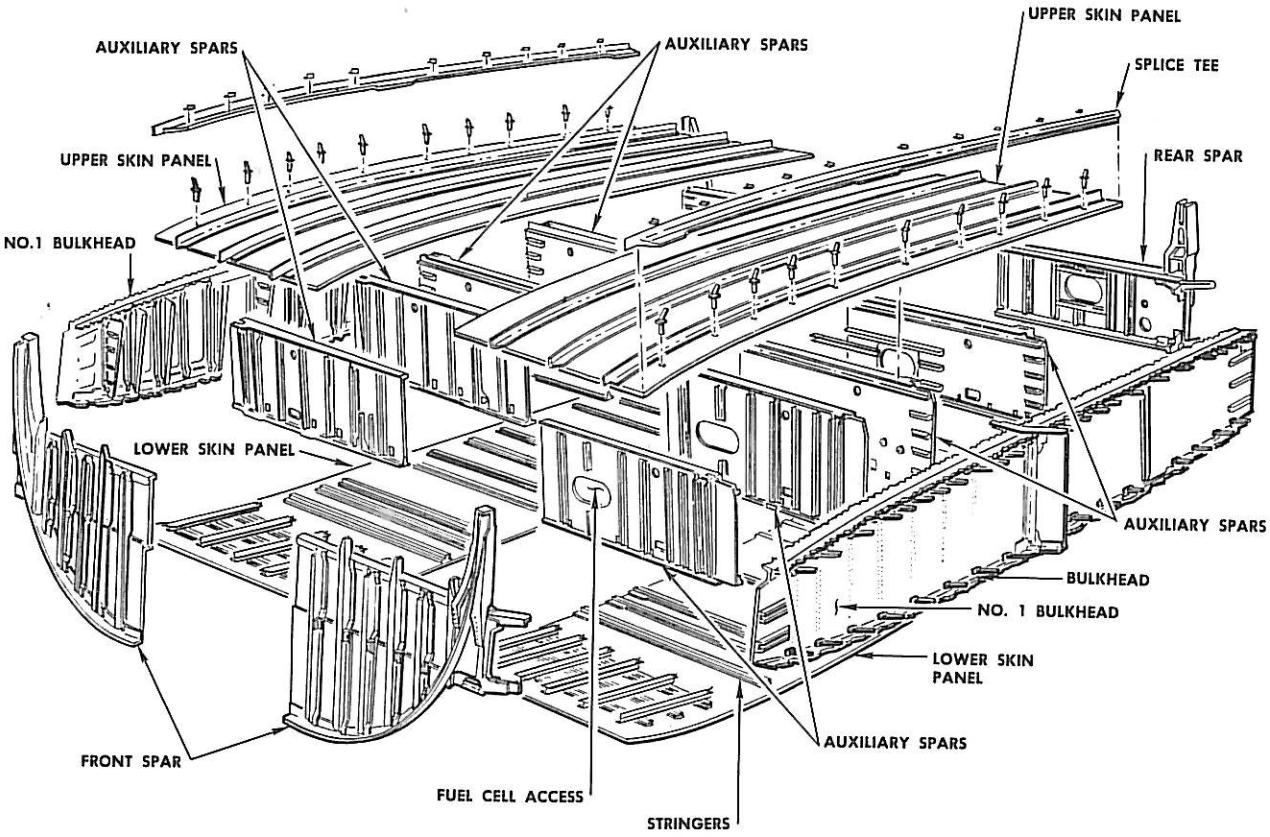
Four heavy aluminum alloy forgings attached to the front and rear spars in the wing center section tie-box, plus eighteen dagger-type fittings along each side of the tie-box, constitute the main wing-to-fuselage attachment provisions. These fittings splice to fuselage bulkheads and beltframes with permanent shear-type fasteners.

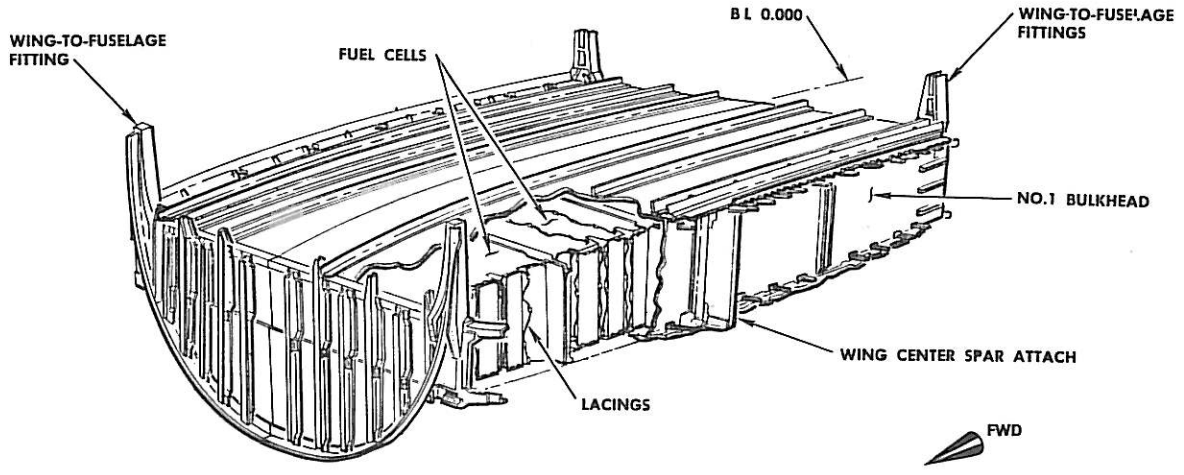
The wing contour outboard of the fuselage (wing station 69, left and right) is maintained by the wing bulkheads or ribs. These members are attached to the spars parallel to the fuselage longitudinal axis from the tie-box section (wing station 69, left and right) outboard to the external splice plate location on the inboard side of the inboard pylon (wing station 224). All bulkheads outboard of this splice plate location, except the wing tip bulkhead, are attached at 90 degrees to the center spar. The tip bulkhead (wing station 688) is parallel to the fuselage longitudinal axis. Plate-stringer skin panels complete the interspar box-beam structure.

The entire interspar assembly is utilized as fuel storage space. Fuel-tight bulkheads and the wing center spar divide each wing into four integral fuel tanks. Five fuel cells are installed in the five bays of the center tie-box. The fuel cells are made from nylon impregnated with Buna N rubber. The cells are held in place by lacing with nylon to fittings installed in the center tie-box bays. Accessibility to the cells is through an access door located on the rear spar in the left main landing gear wheel well. All interspar assembly structural components are Scotchweld bonded.



Wing Interspar Assembly
Figure 1


AUXILIARY SPARS
AUXILIARY SPARS
UPPER SKIN PANEL
SPLICE TEE
UPPER SKIN PANEL
REAR SPAR
NO.1 BULKHEAD
LOWER SKIN PANEL
AUXILIARY SPARS
BULKHEAD
NO. 1 BULKHEAD
LOWER SKIN PANEL
AUXILIARY SPARS
FRONT SPAR
FUEL CELL ACCESS
STRINGERS


WING-TO-FUSELAGE FITTING
FUEL CELLS
B L 0.000
WING-TO-FUSELAGE FITTINGS
NO.1 BULKHEAD
WING CENTER SPAR ATTACH
LACINGS
FWD

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A series of fore-and-aft beams are riveted to the wing center section tie-box to support the cabin flooring, thus eliminating the need for transverse floor beams in the fuselage beltframes above the wing.

2. Wing Spars

A. General.

The three main wing spars are of conventional built-up stiffened web and rail construction. The webs are roll-tapered in some areas and are 7075 aluminum alloy throughout; the stiffeners are 7075 aluminum alloy extrusions. The upper and lower rails of all main spars are "T" extrusions. Both front spar rails and the center and rear spar lower rails are 2024 aluminum alloy and the center and rear spar upper rails are 7178 aluminum alloy.

B. Wing Front Spar.

The front spar consists of one built-up continuous assembly from tip to tip, and contains the pylon forward attach fittings. It is spliced at the fuselage centerline (wing station 0.0) at each side of the wing center section tie-box (wing station 69), and just inboard of the inboard pylons (wing station 224). The front spar also supports the wing leading edge structure.

C. Wing Center Spar.

The center spar is similar in construction to the front spar but does not have a web or spar rails across the center section tie-box. The rails are reduced to stringers in the area of the wing center section tie-box. The center spar web also terminates just outboard of the outboard pylon (center spar station 623); stringers continue the remaining distance to the wing tips. The inboard pylon rear supports and the outboard anti-shock body forward support fitting are on the center spar. The center spar is fuel-tight from the wing center section tie-box to the splice location on the inboard side of the inboard pylon (wing station 224).

D. Wing Rear Spar.

The rear spar is similar in construction to the front spar and like the front spar consists of one continuous built-up assembly from tip to tip. The outboard pylon rear support fittings and the anti-shock body forward support fittings are mounted on the rear spar. The wing rear spar also supports the main landing gear forward trunnion, the outboard end of the main landing gear beam and the wing trailing edge structure.

E. Auxiliary Spars.

The four auxiliary spars located in the wing center section tie-box are of built-up type construction and are mounted at approximately equal

chordwise intervals. These auxiliary spars follow the same principles for materials selection and arrangement as the main wing spars. The upper rails are 7178 aluminum alloy, while the lower rails are 2024 aluminum alloy. The auxiliary spars are spliced at the fuselage centerline (wing station 0.0) similar to the front and rear main spars.

F. Main Landing Gear Beam.

The main landing gear beam supports the main landing gear aft trunnion, inboard spoiler and flap. The beam is attached to the wing rear spar just inboard of the inboard pylon (wing station 224) and to the fuselage. Two machined stretch-leveled plates, of 7079 material, provide the basic structure of this beam. The remainder is of conventional built-up, webcap design using 7075 aluminum alloy.

3. Interspar Bulkheads

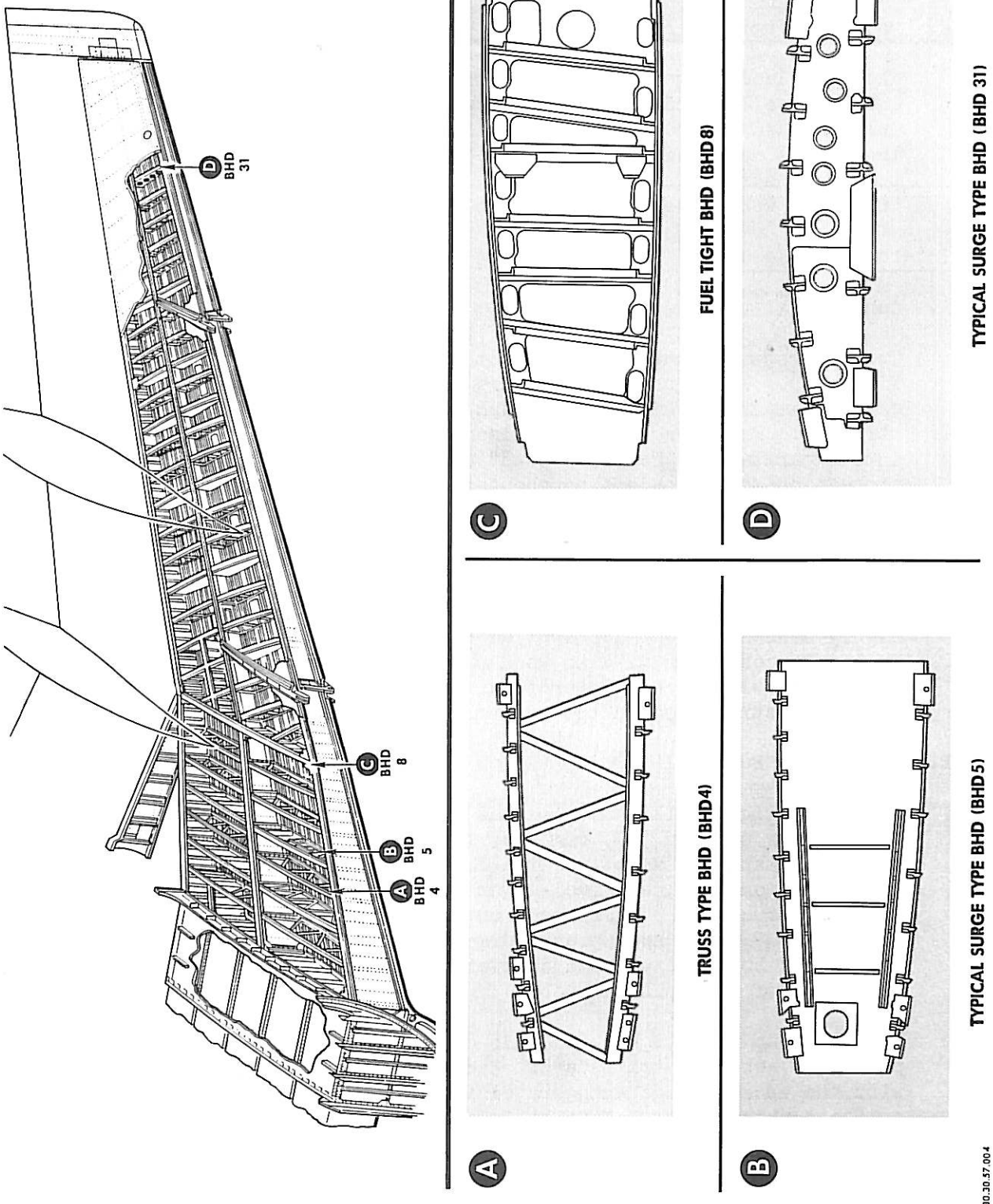
A. General.

The interspar bulkheads are of both the web and the truss type (see Figure 3). Web-type bulkheads are used in areas where support for the engine pylons and hinges for flight controls require additional strength. Web-type bulkheads also divide the wing interspar assembly into separate integral fuel-tight compartments and provide fuel surge protection. Bulkheads throughout the three-spar portion of the wing consist of a front and rear section; those outboard of the wing center spar (center spar station 623) are continuous from the front to the rear spars. The bulkhead rails are connected to the skin by intercostals, between stringer locations; stringers are attached to bulkhead rails by forgings. Full intercostaling is employed on bulkheads that have highly concentrated loads applied by the pylons, flaps, and ailerons. Full intercostaling is also used on surge bulkheads in the inboard portion of wing. This intercostaling provides a fail-safe feature for shear redistribution in the event of a spar web failure.

B. Fuel-Tight Bulkheads.

Four fuel-tight bulkheads, located at wing stations 69, 224, 688 and center spar station 557, comprise the chordwise walls of the integral wing fuel tanks. Except for the extreme outboard fuel-tight bulkhead (wing station 688), all fuel-tight bulkheads are of built-up, web-type construction. The extreme outboard fuel-tight bulkhead (wing station 688) is of hydropress formed construction employing 2024 aluminum alloy; both the upper and lower flanges of this bulkhead are an integral part of the bulkhead web.

The built-up fuel-tight bulkheads consist of upper and lower rails supported by webs and stiffeners. Each rail is a machined "T" extrusion with the cross flange exaggerated in width to serve as part of the splice doubler on the plate-stringer skin panels. The rails of bulkheads



Wing Bulkheads - Typical
Figure 3

at wing station 69 and 224 are 2024 aluminum alloy. The upper and lower rails of the bulkhead at center spar station 557 are 7075 and 2024 aluminum alloy respectively. Bulkhead webs are 7075 bare sheet and the stiffeners are 7075 extrusions.

A series of dagger fittings pass through slots in the bulkhead rails and are riveted in place. These fittings support the stringers of the plate-stringer skin panels, and maintain the fuel tightness between fuel tanks. Fuel-tight corner fittings at the bulkhead attachment to each wing spar ensure a fuel-tight seal.

C. Surge Bulkheads.

The surge bulkheads are located at wing stations 122, 163 and center spar stations 318, 385, 449, 513, 623, 689 and 755. These bulkheads have holes to premit fuel passage but retard fuel surging between bays. The upper and lower rails are extruded "T" sections while the webs are bare sheet with extruded stiffeners. All material in these bulkheads is 7075 aluminum alloy.

D. Truss Bulkheads.

Truss bulkheads are used at remaining locations between wing station 69 and center spar station 667. These bulkheads provide intermediate chordwise supporting structure between the fuel-tight and the surge bulkheads. Truss bulkheads are of the built-up type construction consisting of an upper and lower rail supported by extruded stiffeners. Truss bulkheads are 7075 aluminum alloy throughout.

E. Formed Bulkheads.

The formed bulkheads located outboard of center spar station 667 provide the intermediate chordwise supporting structure between the fuel-tight and surge bulkheads in the outer portion of the wing. These bulkheads are hydropress-formed from 7075 aluminum alloy bare sheet stock. The upper and lower flanges are an integral part of the formed web. Beaded lightening holes are also provided in the web portion of these bulkheads. The stringers of the plate-stringer skin panels attach directly to the formed bulkhead flanges.

4. Plate-Stringer Skin Panels

A. General.

Plate-stringer skin panels constitute the upper and lower exterior surfaces of the wing interspar assembly. These panels consist of extruded "Z" and flanged "T" stringers riveted to the inner surfaces of roll-tapered skins. All stringers are spliced to the fuel-tight bulkheads by riveting the upstanding flange of the stringer to a double-ended

dagger fitting attached to the bulkhead. Stringers are attached to the remaining bulkheads throughout the wing by riveting directly to the bulkhead flanges or by means of clips.

The spanwise skin splices over the wing center spar and the chordwise splice just inboard of the outboard pylon (center spar station 557) are flush. The wide flanges of the spar rails and bulkheads serve as internal doublers. The chordwise splices through the wing center section (wing station 0.0 and 69, left and right) and the chordwise splice just inboard of the inboard pylon (wing station 224) are reinforced by external doubler plates in addition to the wide bulkhead flanges on the inside. By this arrangement, rivets work in a double shear fashion. The lower splice plate doublers on each side of the wing center section tie-box (wing station 69, left and right) and the upper and lower splice plate doublers on the inboard side of the inboard pylon (wing station 224) are exposed.

B. Upper Surface Plate-Stringer Skin Panels.

The upper surface stringers and skin panels are 7178 aluminum alloy throughout. The skin panels taper from 0.090 minimum at the front spar to 0.200 at the rear spar of the wing center tie-box section. From wing station 69 to wing station 224, the skin tapers from 0.145 to 0.200 inch. Plate-stringer skin panels outboard of wing station 224 gradually taper from 0.200 inch down to 0.080 inch at the tip of the interspar assembly (wing station 688).

C. Lower Surface Plate-Stringer Skin Panels.

The lower surface stringers and skin panels are 2024 aluminum alloy. The skin panels taper from 0.108 minimum at the front spar to 0.260 at the rear spar of the wing center tie-box section. From wing station 69 to wing station 224 forward of the center spar, the skin tapers from 0.184 to 0.210 inch, aft of the center spar the skin tapers from 0.280 to 0.310 inch. Plate-stringer skin panels outboard of wing station 224 and forward of the center spar, gradually taper from 0.210 inch down to 0.080 inch at the tip of the interspar assembly (wing station 688). Outboard from wing station 224 and aft of the center spar, the skin panels gradually taper from 0.310 inch down to 0.080 inch at the tip of the interspar assembly.

5. Interspar Access Openings

There are eighteen interspar access openings in the wing lower surface outboard of the center section tie-box (wing station 69). Openings in the wing skins are reinforced by internal skin doublers with reinforcing angles added to the adjacent stringers. The access doors are 2024 aluminum alloy and are chemically milled on the inner side. Countersunk head screws and fuel-tight dome nuts secure the access doors.

A Fairprene ring seal is molded into a groove around each access door to provide a fuel-tight seal between the door and the wing. Access to the wing

center section tie-box inner structure is provided by an access door through the wing rear spar web in the left main wheel well. Each center section auxiliary spar has a rectangular opening in its web for access to all five compartments in the tie-box.

6. Fuel-Tighting

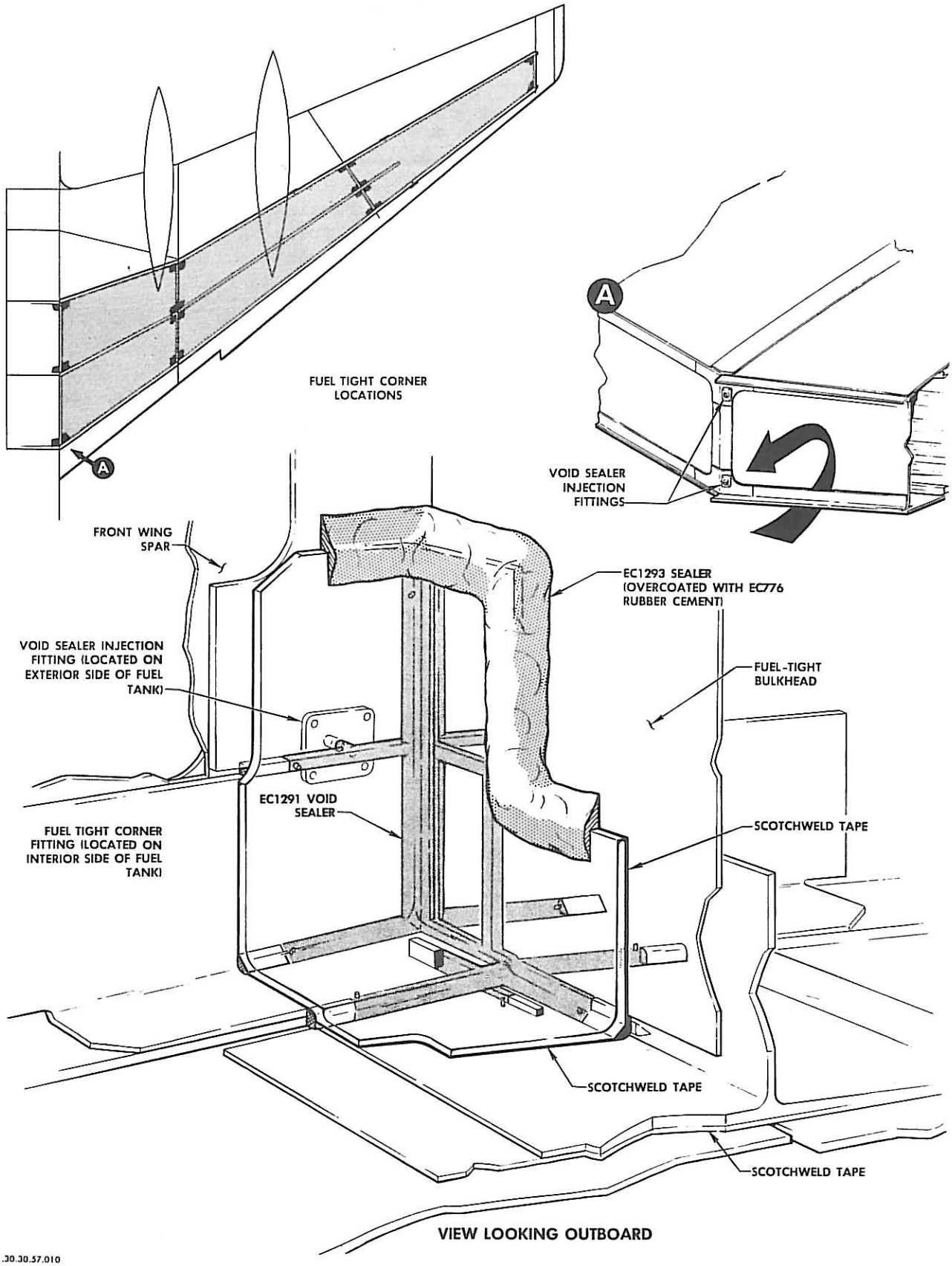
The Scotchweld process is used in sealing the integral fuel tanks. This process consists of thoroughly cleaning and rinsing all interspar assembly parts, prior to assembly, that are exposed to fuel. Areas exposed to fuel, including component faying surfaces, are then treated with Alodine, rinsed and dried. After Alodine treatment, areas exposed to fuel, including component faying surfaces, are then sprayed or dipped with Scotchweld prime and oven baked.

After surface treatment, Scotchweld tape is placed between faying surfaces of the interspar assembly parts and the assembly is riveted. The interspar assembly is then placed in a large oven and baked. Scotchweld tape and prime are thermo-setting, adhesive-type plastics that cure through application of heat. Once cured, they are resistant to softening by any further application of heat.

Baking cures the Scotchweld tape and prime, making them impervious to attack by fuels and most chemicals. The Scotchweld prime which covers the entire inner surface of the interspar assembly is also highly resistant to abrasion and attack by corrosive elements. Structural shear strength of Scotchweld-bonded joints is approximately 4000 pounds per square inch. Theoretically, this value is not considered in interspar assembly structural strength; the rivet patterns are ample to carry the full design loads. However, this bonding does serve to relieve stress concentrations at rivets, and increases the fatigue life of the parts.

Fuel-tight corner fittings are installed at the junction of all fuel-tight bulkheads and spars to ensure a fuel-tight seal. Following the Scotchweld curing process, all voids are injected with void sealer. The edges of the corner fittings are then filleted with sealer and overcoated with rubber cement; see Figure 4.

Basic rivets used in wing structure are 2024 (DD) aluminum alloy rivets with no special sealing provisions. These rivets include AN470DD rivets and special 82-degree countersunk head fuel sealing rivets. Where nonswelling fasteners such as bolts and Huck lock bolts are used, special sealing is provided by Fairprene "O" rings or special seal washer; see Figure 5.

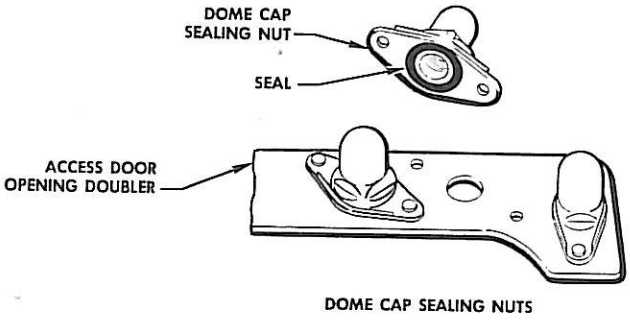


.30.30.57.010

Wing Fuel-Tight Corner - Typical
Figure 4

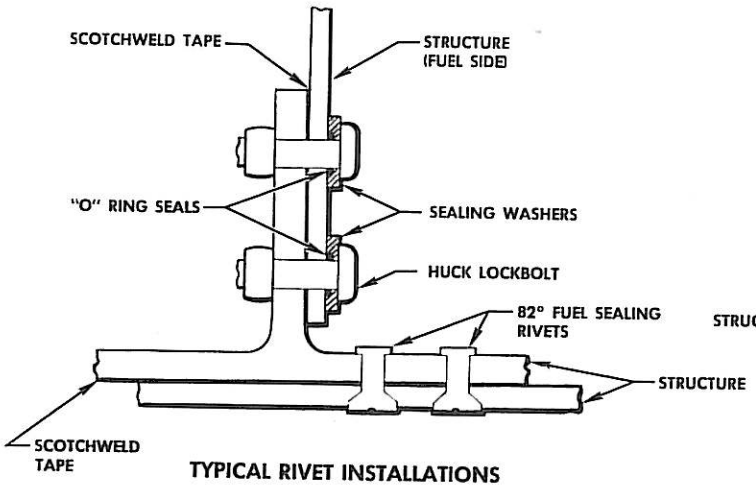
NOTES

1. ALL FAYING SURFACES AND SURFACES IN CONTACT WITH FUEL ARE SPRAYED WITH A THIN COAT OF SCOTCHWELD PRIME.
2. SCOTCHWELD TAPE IS EMPLOYED BETWEEN THE FAYING SURFACES OF WING INTERSPAR COMPONENTS.
3. SPECIAL 82° COUNTERSUNK HEAD RIVETS ATTACH THE WING OUTER SKIN TO THE STRINGERS AND INTERSPAR STRUCTURE.
4. THE SPECIAL 82° COUNTERSUNK HEAD RIVETS AND AN470DD RIVETS IN THE WING INTERSPAR STRUCTURE UTILIZE NO SPECIAL SEALING PROVISIONS OTHER THAN THE SCOTCHWELD TAPE AND PRIME.

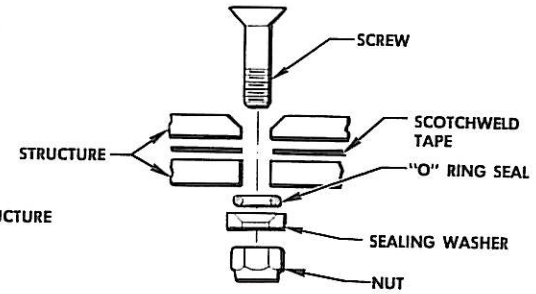


DOME CAP SEALING NUTS

TYPICAL OF FUEL TANK ACCESS DOORS



TYPICAL RIVET INSTALLATIONS



TYPICAL SCREW AND BOLT INSTALLATION

22.30.57.008

WING INTERSPAR ASSEMBLY - MAINTENANCE PRACTICES

1. General

Prior to making any check or repairs requiring opening of the wing interspar assembly, the fuel tanks must be inerted. (Refer to Chapter 28, FUEL.) Use only vapor proof lights for fuel tank illumination. Electrical power equipment must not be used. Never work alone in fuel tank; maintain constant communication with someone outside. Guard against scratching or damaging the Scotchweld primed surfaces in the wing interspar assembly.

2. Blow-Back Air Test

A. General.

When origin of a fuel leak cannot be found by visual examination, the blow-back method may be effective. The blow-back method is also used to check approved repairs. This procedure is accomplished with the fuel tanks drained and inerted.

B. Equipment Required.

(1) Source of shop air pressure.

(2) Length of hose which will serve as an air nozzle.

(3) Bubble fluid, Specification MIL-S-4282.

C. Procedure.

(1) Connect length of hose called out in B.(2) to shop air pressure and apply air pressure to external leak point.

(2) Check interior of the interspar assembly with bubble fluid, Specification MIL-S-4282, to find internal leak point. Use bubble fluid sparingly.

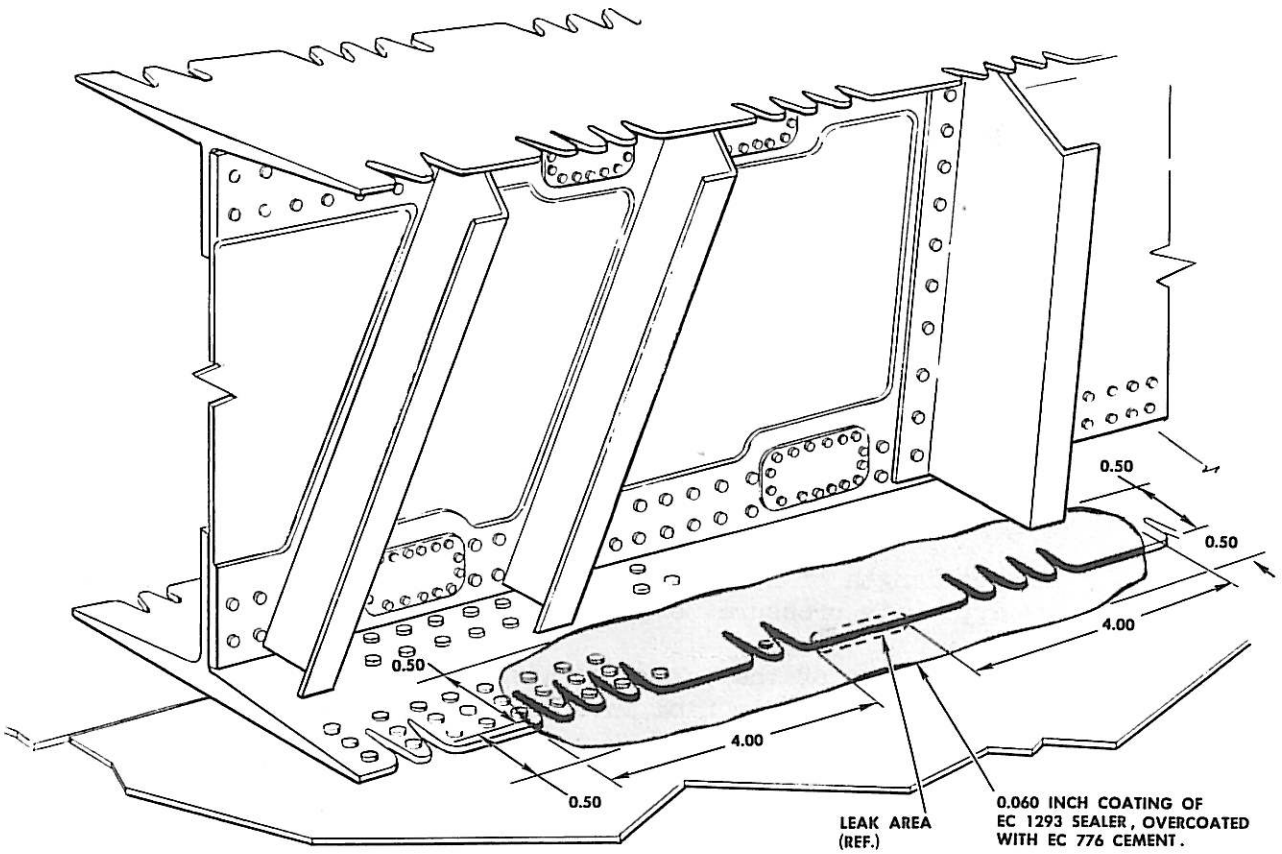
(3) After locating leak origin, thoroughly clean bubble fluid from interior of the interspar assembly.

3. Approved Repairs

A. Wing Fuel Leak Repair (see Figure 201).

(1) Equipment Required.

(a) Aliphatic naphtha, Federal Specification TT-N-95A.


0.50
0.50
4.00
0.50
4.00
0.50
LEAK AREA
(REF.)
0.060 INCH COATING OF
EC 1293 SEALER, OVERCOATED
WITH EC 776 CEMENT.

22.02.57.023A

(b) EC 1293 sealer, 3M Co. St. Paul 6, Minn., only.

(c) EC 776 cement, 3M Co. St. Paul 6, Minn., only.

(2) Procedure.

(a) Locate origin of fuel leak.

(b) Using a clean cloth dampened with aliphatic naphtha, thoroughly clean leak area.

(c) Apply an 0.060-inch thick coating of EC 1293 sealer over leak area. Allow sealer to dry until tack free.

(d) Apply an overcoat of EC 776 cement over sealer applied in step (2) (c).

(e) Allow EC 776 cement to dry 12 hours.

(f) Accomplish blow-back air test procedure.

B. Fuel-Tight Dome Nut Replacement (see Figure 202).

(1) Equipment Required.

(a) Aliphatic naphtha, Federal Specification TT-N-95a, only.

(b) EC 1293 sealer, 3M Co. St. Paul 6, Minn., only.

(c) EC 776 cement, 3M Co. St. Paul 6, Minn., only.

(2) Replace Dome Nut.

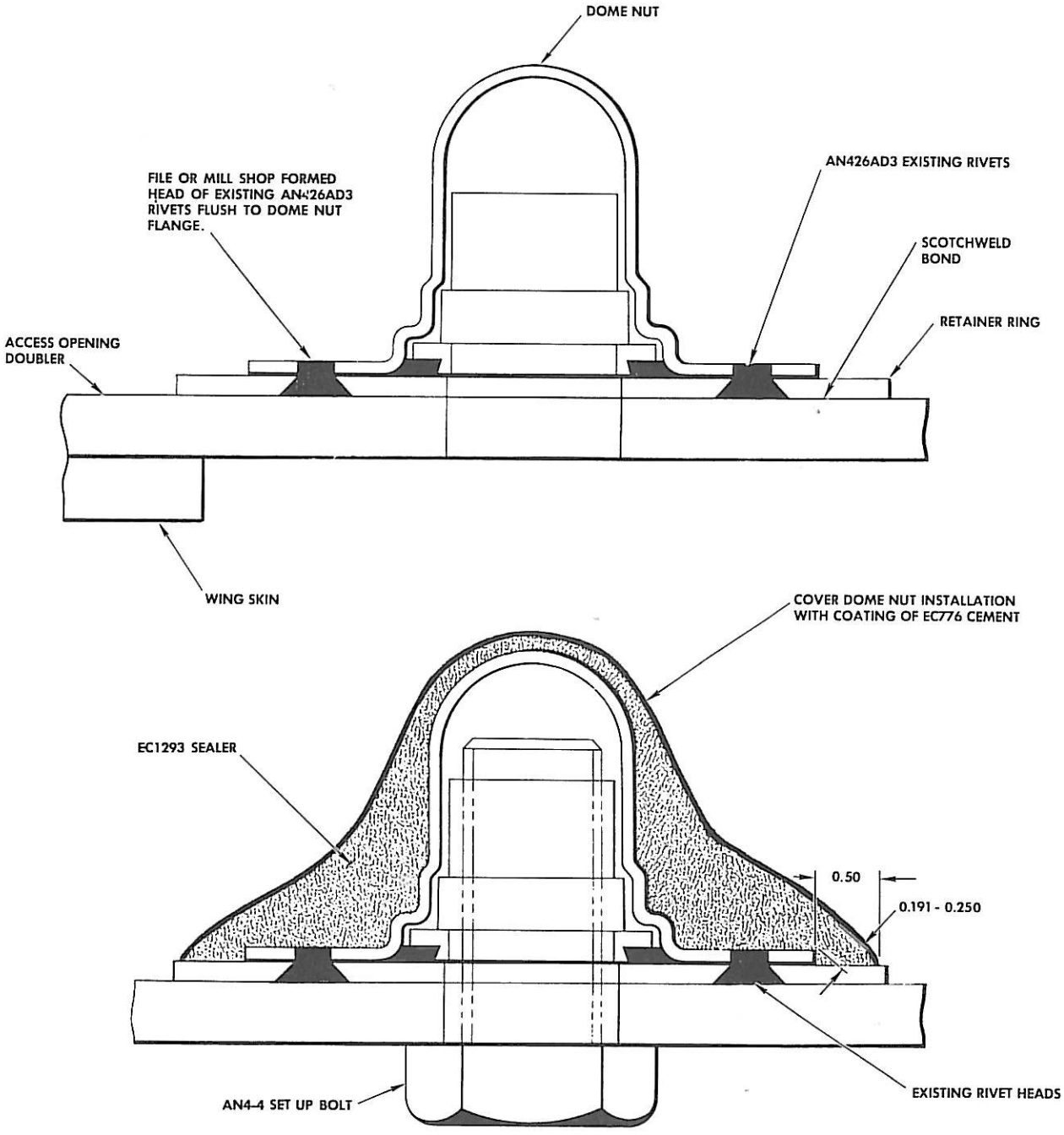
(a) Remove access door.

(b) File or mill shop formed head of AN426AD3 dome nut attach rivets as shown in Figure 202.

(c) Remove dome nut.

CAUTION: DO NOT ATTEMPT TO REMOVE DOME NUT ATTACH RIVETS.

(d) Clean faying surfaces between dome nut and retainer ring with a clean lint-free cloth moistened with aliphatic naphtha.



PROCEDURE:

1. OBSERVE ALL FUEL TANK SAFETY PRECAUTIONS AS OUTLINED IN 57-1-5.
2. REMOVE DAMAGED DOME NUT AS SHOWN.
3. CLEAN AREA WITH LINT FREE CLOTH MOISTENED WITH ALIPHATIC NAPHTHA, OR EQUIVALENT.
4. SECURE NEW DOME NUT IN PLACE WITH AN4-4 SET UP BOLT.
5. APPLY THICK COATING OF EC1293 SEALANT AS SHOWN.
6. CURE SEALANT AT ROOM TEMPERATURE FOR 24 HOURS OR HEAT CURE WITH HEAT LAMPS AT 66 DEGREES C (150 DEGREES F) FOR 1½ HOURS.
7. APPLY COATING OF EC776 OVER CURED SEALANT AS SHOWN.
8. REMOVE SET UP BOLT; OBSERVING FOR SECURITY OF DOME NUT.

22.03.57.018-28

(e) Apply thin coating of EC 1293 sealant to faying surfaces of dome nut tabs.

CAUTION: DO NOT FILL ATTACH SCREW HOLE IN DOME NUT WITH SEALANT.

(f) Install dome nut.

NOTE: Use set-up bolt to secure dome nut to retainer ring.

(g) Using a clean cloth dampened with aliphatic naphtha, thoroughly clean dome nut and adjacent structure.

(h) Apply EC 1293 sealant as shown in Figure 202. Allow sealant to cure until tack free.

(i) Apply overcoating of EC 776 cement over sealant, as shown in Figure 202.

(j) Cure as directed in Figure 202.

(k) Accomplish blow-back air test procedure as directed in paragraph 2.

(l) Remove set-up bolt.

(m) Reinstall access door.

CAUTION: USE ONLY SCREWS OF CORRECT LENGTH WHEN INSTALLING ACCESS DOORS. SCREWS OF INCORRECT LENGTH MAY DAMAGE THE DOME NUTS AND RESULT IN FUEL LEAKS. REFER TO CHAPTER 12, SERVICING, FOR PROPER SCREW LENGTHS.

C. Fuel-Tight Dome Nut Temporary Repair.

(1) Equipment Required.

(a) Aliphatic naphtha, Federal Specification TT-N-95a.

(b) EC 1293 sealer, 3M Co. St. Paul 6, Minn., only.

(c) EC 776 cement, 3M Co. St. Paul 6, Minn., only.

(2) Repair Damaged Dome Nut.

(a) Remove access door.

(b) Using a clean cloth dampened with aliphatic naphtha, thoroughly clean damaged dome nut and adjacent structure.

(c) Coat damaged dome nut with 0.191 to 0.250-inch coat of EC 1293 sealer as shown on Figure 202. Allow sealer to dry until tack free.

(d) Apply an overcoat of EC 776 cement over sealer applied in step (2) (c).

(e) Allow EC 776 cement to dry 12 hours.

(f) Accomplish blow-back air test procedure as directed in paragraph 2.

(g) Reinstall access panel.

CAUTION: USE ONLY SCREWS OF CORRECT LENGTH WHEN INSTALLING ACCESS PANELS. SCREWS OF INCORRECT LENGTH MAY DAMAGE THE DOME NUTS AND RESULT IN FUEL LEAKAGE. REFER TO CHAPTER 12, SERVICING, FOR PROPER SCREW LENGTHS.

D. Replacement of Leaking 82-Degree Rivet (see Figure 203).

(1) General.

Leaking 82-degree countersunk head rivets may be replaced with new 82-degree countersunk head rivets (refer to the Structural Repair Manual) or by reversing AN470DD rivets as described in procedure which follows.

(2) Equipment Required.

(a) Aliphatic naphtha, Federal Specification TT-N-95a.

(b) EC 1291 or EC 1293 sealer, 3M Co. St. Paul 6, Minn., only.

(c) EC 776 cement, 3M Co. St. Paul 6, Minn., only.

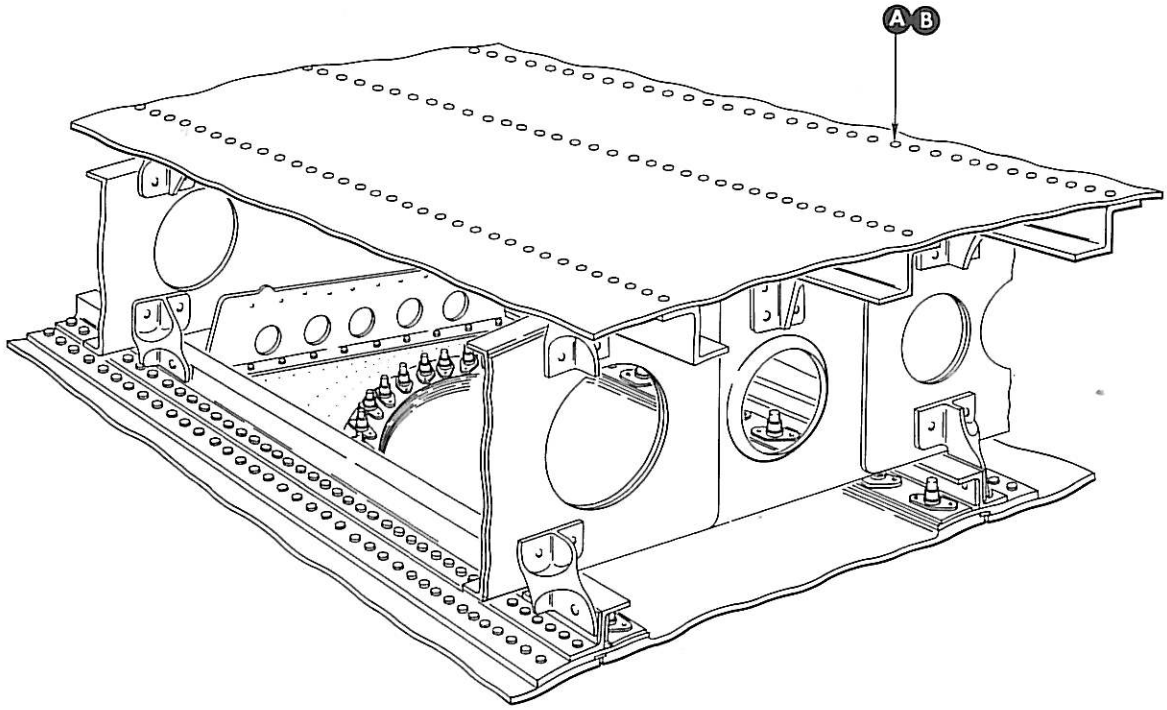
(3) Procedure.

(a) Drill through center of the leaking 82-degree rivet shop head. Remove shop head with a steel punch.

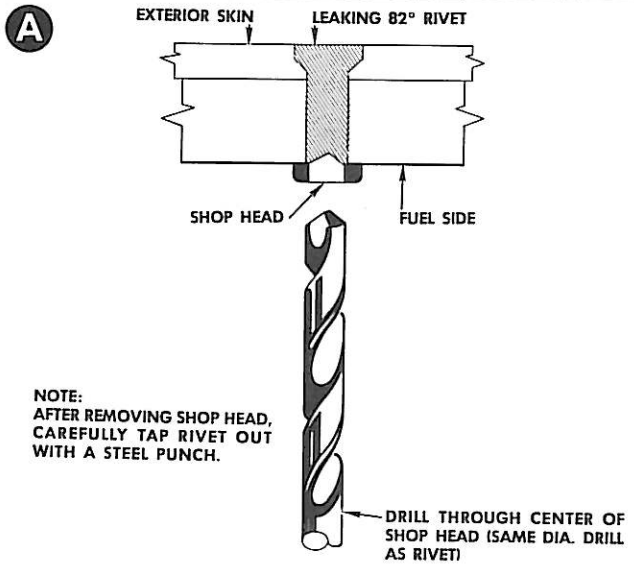
(b) Carefully tap the 82-degree rivet from rivet hole.

(c) Apply EC 1291 (or EC 1293 as an acceptable alternate) sealer to neck of AN470DD rivet and install rivet from interior side of fuel tank. Drive rivet so as to form shop head in the 82-degree countersink.

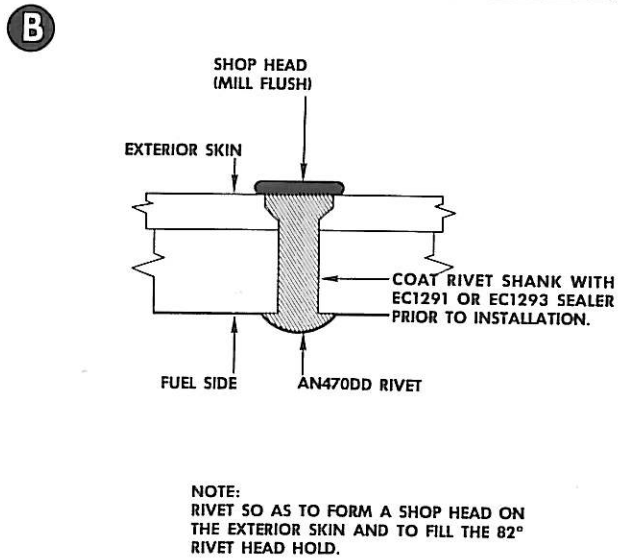
(d) Using a clean cloth dampened with aliphatic naphtha, thoroughly clean manufactured head of the AN470DD rivet and adjacent interior structure.



AREA OF ASSUMED DAMAGE



82° RIVET REMOVAL



INSTALLATION OF AN470DD RIVET IN LIEU OF 82° RIVET

22.02.57.024

(e) Apply an overcoat of EC 776 cement over area just cleaned in step (3) (d).

(f) Mill shop head of rivet off flush with exterior skin.

(g) Allow EC 776 cement to dry 12 hours.

(h) Accomplish blow-back air test procedure as directed in paragraph 2.

WING LEADING EDGES - DESCRIPTION AND OPERATION

1. General

The wing leading edges are of the hot air anti-icing type. The leading edge of each wing (see Figure 1) consists of a stub section next to the fuselage and a stub section at each side of the pylons. Each main section inboard of the inboard pylon hinges to the upper rail of the wing front spar and attaches to the lower rail with screws. The stub sections, the intermediate and outboard leading edge sections attach to both spar rails with screws.

*Leading edge flaps are installed on the lower surface of the leading edge sections of each wing. For description and operation of the leading edge flap control system refer to Chapter 27, FLIGHT CONTROL.

2. Leading Edge Structure

The outer skin of each leading edge section is chemically etched on the inner side to produce a series of chordwise channels approximately two inches wide. An upper and lower inner skin panel is riveted to the inner surface of the chemically etched outer skin to form a series of chordwise air channels around the leading edge portion of the wing for the flow of hot anti-icing air.

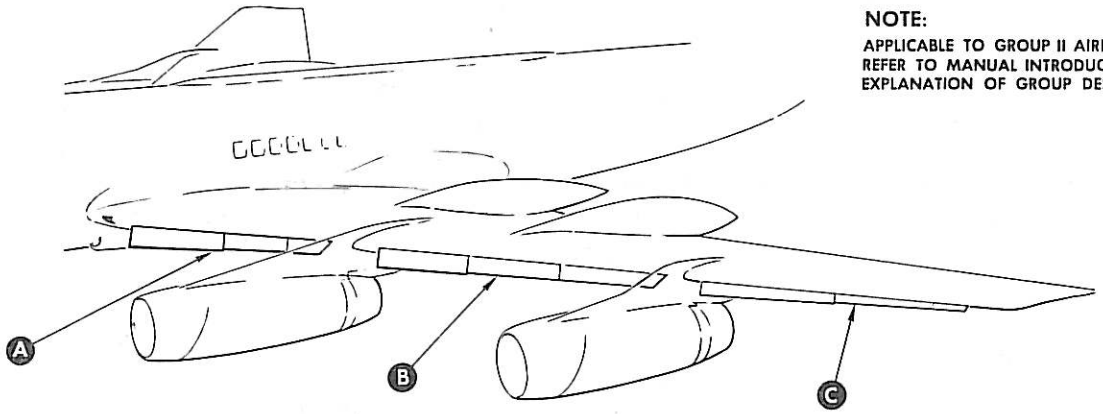
A forward spanwise baffle on the inboard section separates the forward hot air chamber from the rear or exhaust chamber. A fiberglas rear baffle isolates the wing front spar from the hot air in the leading edge. Each intermediate and outboard wing leading edge section has a slot in its lower aft surface just forward of the wing front spar to allow the anti-icing air to exhaust overboard. The inboard leading edge sections exhaust overboard just forward of the leading edge flaps attach point.

Formed ribs constitute the chordwise stiffening structure. The ribs are flanged for attachment to the skins and the forward and rear spanwise baffles. The ribs also contain beaded lightening holes for air circulation and to reduce weight. Except for the fiberglas rear baffle, 2024 aluminum alloy is used throughout.

3. Anti-Icing Air Distribution

Hot bleed air from the engine compressor sections is routed to the fixed leading edges through an insulated manifold, supported by the wing front spar. This heated air is routed from the manifold to a titanium duct in the leading edge. This duct is mounted directly aft of the leading edge nose in the forward hot air chamber. Small holes in the forward side of

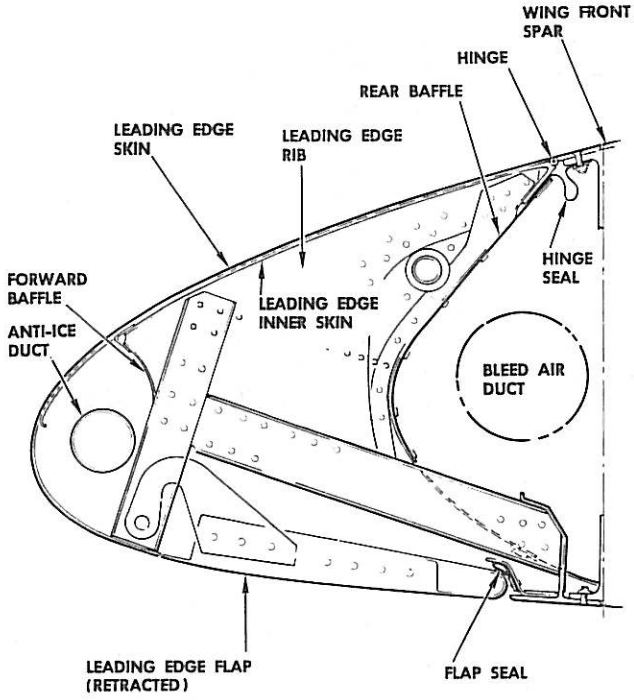
*Applicable to Group II Airplanes; Refer to Manual INTRODUCTION for Explanation of Group Designations.



NOTE:
APPLICABLE TO GROUP II AIRPLANES. REFER TO MANUAL INTRODUCTION FOR EXPLANATION OF GROUP DESIGNATIONS.

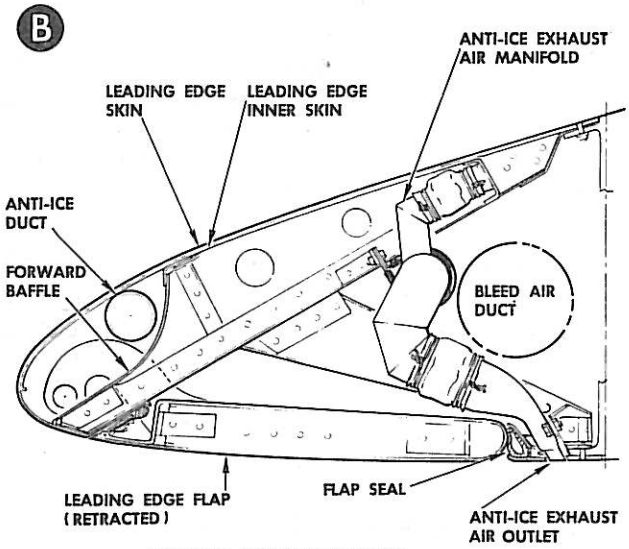
INBOARD, INTERMEDIATE, AND OUTBOARD LEADING EDGE FLAPS
(SHOWN EXTENDED)

A



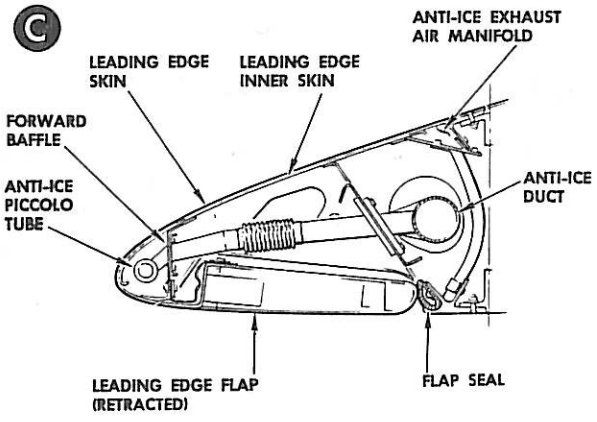
TYPICAL CROSS-SECTION—INBOARD LEADING EDGE

B



TYPICAL CROSS-SECTION—INTERMEDIATE LEADING EDGE

C



TYPICAL CROSS-SECTION—OUTBOARD LEADING EDGE

30.02.57.019

the duct direct streams of heated air forward and into the air channels provided by the chemically etched outer leading edge skin. The heated air travels through these air channels to the rear or exhaust air chamber. The small size of these channels insures maximum heat transfer. The anti-ice air is then exhausted overboard through the slot provided in the lower surface of each leading edge section. For description and operation of the wing anti-ice system refer to Chapter 30, ICE AND RAIN PROTECTION.

WING LEADING EDGES - MAINTENANCE PRACTICES

1. Removal/Installation

A. General.

Removal/Installation of the inboard, intermediate, and outboard leading edge sections is as follows:

(1) Inboard leading edge; refer to 57-2-1.

(2) Intermediate leading edge; refer to 57-2-2.

(3) Outboard leading edge; refer to 57-2-3.

NOTE: For removal/installation of the wing leading edge flaps, refer to Chapter 27, FLIGHT CONTROLS.

2. Inspection/Check

A. Access.

Extend leading edge flaps as directed in Chapter 27, FLIGHT CONTROLS. Open inboard leading edge; remove intermediate and outboard leading edges. Remove rear baffles from each leading edge section.

B. Check the following:

(1) Leading edge exterior skins for cracks, corrosion, and loose rivets.

(2) Leading edge inner skins, ribs and baffles for cracks, corrosion, and loose fasteners.

(3) Anti-ice ducts for cracks and security of attachment. In addition, check bellows assemblies used at leading edge splices for condition.

(4) Inboard leading edge hinge and hinge seal for condition and security of attachment.

(5) Leading edge flaps for cracks, corrosion, and security.

3. Cleaning/Painting

A. Keep leading edges free from contaminants or materials that could damage metals. Clean as directed in Chapter 51, STRUCTURES - GENERAL.

4. Approved Repairs

Replace or repair damaged sealants as directed in Chapter 51, STRUCTURES - GENERAL.

WING INBOARD LEADING EDGE - MAINTENANCE PRACTICES

1. Removal/Installation (see Figure 201)

A. General.

The wing inboard leading edge extends from the inboard leading edge stub section to the inboard pylon. It consists of three sections spliced together. Each section is removed independently of the others after performing the steps outlined in Paragraph C.

B. Equipment Required.

(1) Aliphatic Naphtha, Federal Specification TT-N-95A.

(2) EC 1662 primer, 3M Co., or equivalent.

(3) EC 1667 sealing compound, 3M Co., or equivalent.

(4) Fullerine Wax No. 2, W. P. Fuller Paint Co., or equivalent.

(5) Torque wrench calibrated in inch-pounds.

(6) Wing stand.

(7) Suitable brace for support of leading edge when hinged up.

C. Remove Wing Inboard Leading Edge.

(1) Remove the following exterior access panels:

(a) Access panel in lower surface of the inboard leading edge stub section. (Bag and tag screws for installation.)

(b) Access panel at each inboard leading edge splice (two places). (Bag and tag screws for installation.)

(2) Open Leading edge flaps.

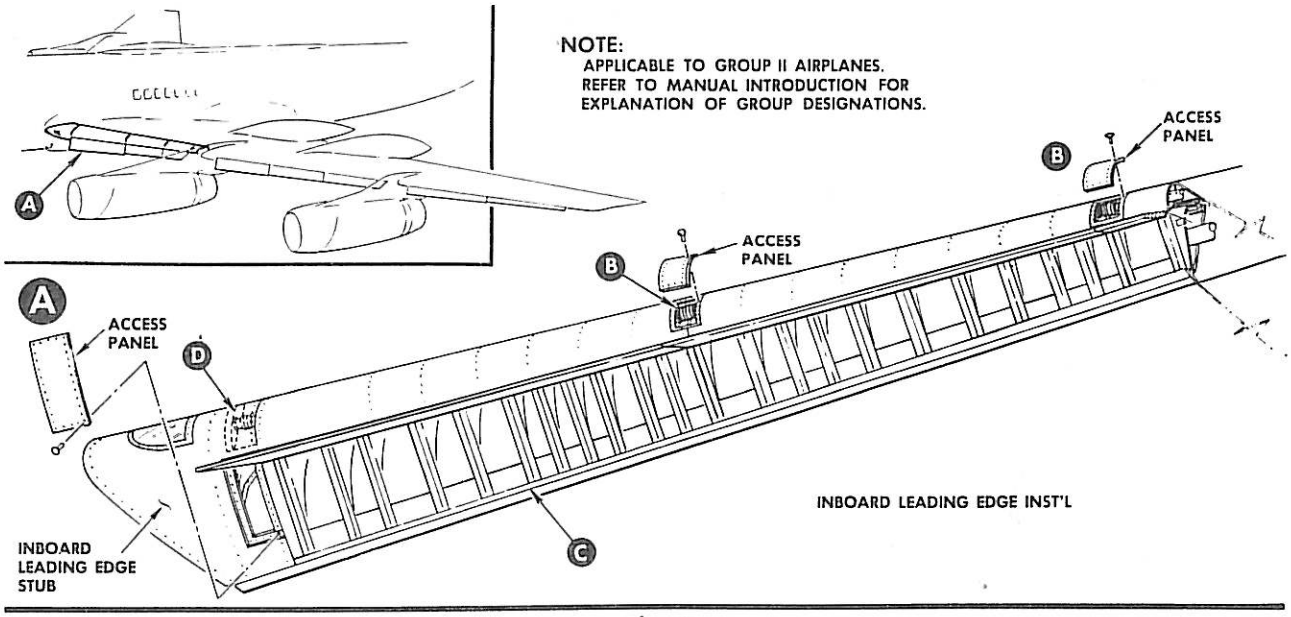
(3) Accomplish the following through access openings in lower surface of the inboard leading edge stub section:

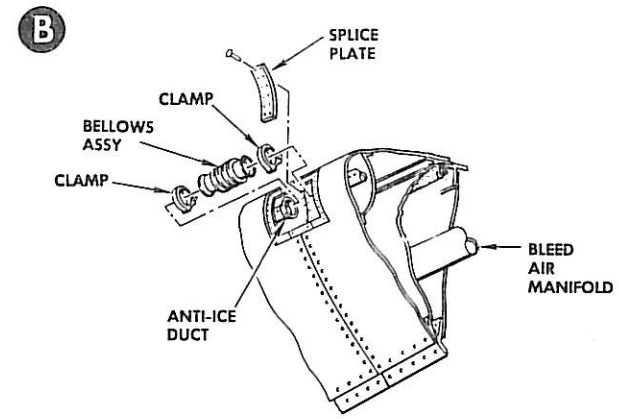
(a) Remove screws securing the interior access panel, forward of access opening; remove interior access panel. (Bag and tag screws for installation.)

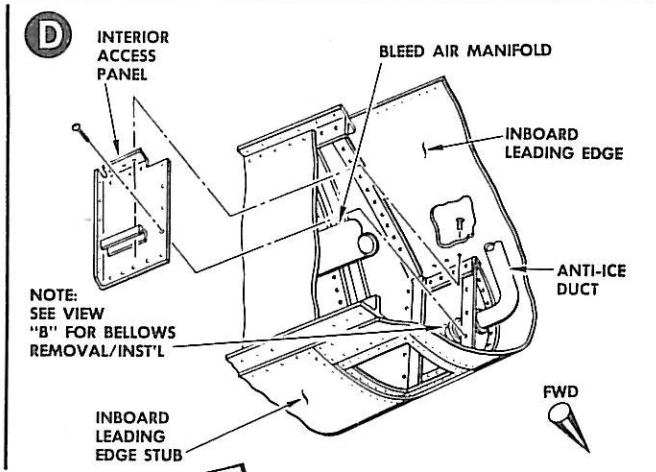
(b) Remove clamps at each side of the bellows assembly; remove bellows assembly. Tag clamps and bellows assembly for installation.)

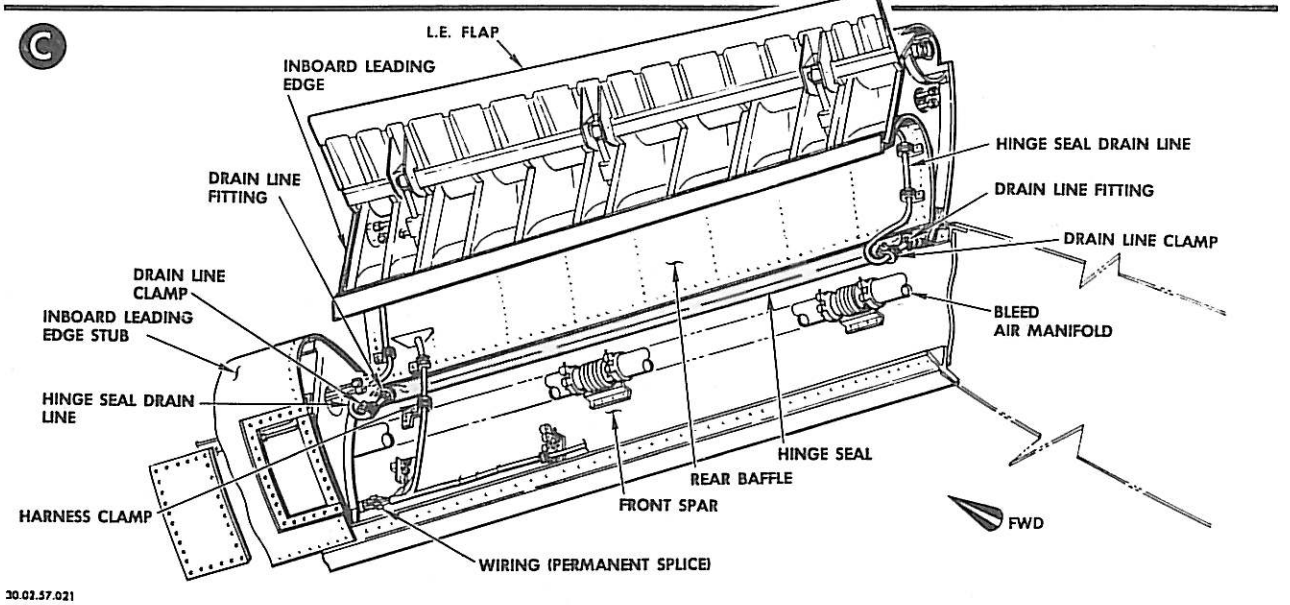
(c) Disconnect hydraulic lines. (Cover open ends of lines.)

(d) Disconnect electrical harness at permanent splice and remove harness clamps as required. (Tag wires for installation.)


NOTE:
APPLICABLE TO GROUP II AIRPLANES.
REFER TO MANUAL INTRODUCTION FOR
EXPLANATION OF GROUP DESIGNATIONS.
A
B
ACCESS PANEL
ACCESS PANEL
ACCESS PANEL
D
G
INBOARD LEADING EDGE INST'L
INBOARD LEADING EDGE STUB


B
SPLICE PLATE
CLAMP
BELLOWS ASSY
CLAMP
BLEED AIR MANIFOLD
ANTI-ICE DUCT


D
INTERIOR ACCESS PANEL
BLEED AIR MANIFOLD
INBOARD LEADING EDGE
ANTI-ICE DUCT
NOTE:
SEE VIEW "B" FOR BELLOWS REMOVAL/INST'L
FWD
INBOARD LEADING EDGE STUB


C
L.E. FLAP
INBOARD LEADING EDGE
HINGE SEAL DRAIN LINE
DRAIN LINE FITTING
DRAIN LINE FITTING
DRAIN LINE CLAMP
DRAIN LINE CLAMP
INBOARD LEADING EDGE STUB
BLEED AIR MANIFOLD
HINGE SEAL DRAIN LINE
HINGE SEAL
REAR BAFFLE
FRONT SPAR
FWD
HARNESS CLAMP
WIRING (PERMANENT SPLICE)

30.02.57.021

(4) Accomplish the following at splice locations between each of the inboard leading edge sections:

(a) Remove clamps at each side of the bellows assembly; remove bellows assembly. (Tag clamps and bellows assembly for installation.)

(b) Remove screws securing splice plates between the leading edge sections; remove splice plates. (Bag and tag screws and splice plates for installation.)

(c) Disconnect and remove short sections of hydraulic lines; cover open ends of hydraulic lines.

(5) Remove screws attaching lower edge of leading edge to wing front spar. (Bag and tag screws for installation.)

(6) Hinge leading edge upward and secure.

NOTE: The area along the wing front spar is now accessible for inspection or maintenance. If complete removal of the leading edge is desired, proceed with the following steps:

(7) Open LH WING ANTI-ICE CONTROL, RH WING ANTI-ICE CONTROL, KRUEGER FLAP - CONT, and KRUEGER FLAP - POSITION WARN circuit breakers on the main circuit breaker panels. (Hang warning sign on circuit breaker panel.)

(8) Disconnect electrical wiring to each of the three inboard leading edge sections at permanent splice points. Remove harness clamps. (Tag wires for installation.)

(9) Loosen clamps securing hinge seal drain lines to hinge seal (two places); disconnect the two drain lines.

(10) Remove the spanwise row of screws adjacent to the hinge seal attaching the leading edge rear baffle to the leading edge structure. (Bag and tag screws for installation.)

(11) Support leading edge and remove screws attaching leading edge hinge to the wing front spar. (Bag and tag screws for installation.) Remove leading edge.

D. Install Wing Inboard Leading Edge.

(1) Check the leading edge hinge seal and the chordwise beadseals for condition; replace as required.

(2) Position leading edge so that hinge aligns with screw holes in the upper rail of the wing front spar. Secure leading edge in the open position.

(3) Insert hinge seal between leading edge rear baffle and the leading edge structure. Align seal with screw holes and install screws.

(4) Connect hinge seal drain line to hinge seal (two places) and tighten clamps.

(5) Splice wiring from each inboard leading edge to the permanent splice locations on the front spar wire bundle.

(6) Close the leading edge and install screws attaching lower edge of leading edge to the wing front spar.

(7) Accomplish the following at splices between each of the inboard leading edge sections.

(a) Install short sections of hydraulic lines.

(b) Clean sealing compound from the splice plates and the leading edge forward baffle at the splice locations with a clean cloth dampened with aliphatic naphtha.

(c) Apply a coat of EC 1662 primer, or equivalent, per manufacturer's instructions to areas just cleaned in step (7) (a). Allow primer to air dry 30 minutes.

(d) Apply a thin coat of EC 1667 sealing compound or equivalent, per manufacturer's instruction, to faying surface of the splice plates.

(e) Align splice plates with attach holes in the leading edge forward baffle and install screws.

(f) Apply a fillet of sealing compound in any existing opening around the splice plates to completely seal the leading edge forward baffle.

(g) Clean the anti-ice duct flanges, bellows assembly flanges, and clamps with a clean cloth dampened with aliphatic naphtha.

(h) Apply a heavy coat of Fullerine Wax No. 2, or equivalent, to inside of each clamp "V."

(i) Position bellows assembly and install clamps; torque to 45 inch-pounds.

NOTE: The notched portion of the clamp flanges is positioned over duct indexes.

(j) Tap clamps with a small mallet to seat flanges into "V" of clamps and retorque clamp bolts to 45 inch-pounds. Repeat until torque is stabilized at 45 inch-pounds.

(k) Clean sealing compound from faying surfaces of the access panel and leading edge with a clean cloth dampened with aliphatic naphtha.

(l) Apply a coat of EC 1662 primer, or equivalent, per manufacturer's instructions to areas just cleaned in step (7) (j). Allow primer to air dry 30 minutes.

(m) Apply a thin coat of EC 1667 sealing compound or equivalent, per manufacturer's instructions to faying surface of access panel. Install access panel.

(n) Clean excess sealing compound from leading edge with cloth dampened with aliphatic naphtha.

(8) Accomplish the following through access opening in lower surface of inboard leading edge stub section.

(a) Connect hydraulic lines.

(b) Connect electrical harness at permanent splice and install harness clamps.

(c) Clean the anti-ice duct flanges, bellows assembly flanges, and clamps with a clean cloth dampened with aliphatic naphtha.

(d) Apply a heavy coat of Fullerine Wax No. 2, or equivalent, to inside of each clamp "V."

(e) Support bellows assembly in position and install clamps; torque clamps to 45 inch-pounds.

(f) Tap clamps with a small mallet to seat flanges into "V" of clamps and retorque clamp bolts to 45 inch-pounds. Repeat until torque is stabilized at 45 inch-pounds.

(g) Clean sealing compound from faying surfaces of the interior access panel and areas of attachment inside leading edge stub section with a clean cloth dampened with aliphatic naphtha.

(h) Apply a coat of EC 1662 primer, or equivalent, per manufacturer's instructions to areas just cleaned. Allow primer to air dry 30 minutes.

(i) Apply a thin coat of EC 1667 sealing compound, or equivalent, per manufacturer's instructions to faying surface of interior access panel.

(j) Install interior access panel. Apply a fillet of sealing compound in any existing opening around interior access panel to completely seal bellows assembly cavity.

(9) Install access panel on lower surface of the inboard leading edge section.

(10) Close LH WING ANTI-ICE CONTROL, RH WING ANTI-ICE CONTROL, KRUEGER FLAP-CONT, and KRUEGER FLAP - POSITION WARN circuit breakers on main circuit breaker panel. (Remove warning sign from circuit breaker panel.)

(11) Close leading edge flaps.

(12) Allow sealing compound used in the leading edge installation to cure for length of time specified by manufacturer.

(13) Perform leading edge temperature sensor test. (Refer to Chapter 30, ICE AND RAIN PROTECTION.)

(14) Perform leading edge flap operation test. (Refer to Chapter 27, FLIGHT CONTROLS.)

WING INTERMEDIATE LEADING EDGE - MAINTENANCE PRACTICES

1. Removal/Installation (see Figure 201)

A. General.

The wing intermediate leading edge extends from the inboard pylon to the outboard pylon. It consists of three sections spliced together at span midpoints. Each section is removed independently of the other after performing the steps outlined in Paragraph D.

B. Equipment Required.

(1) Aliphatic Naphtha, Federal Specification TT-N-95A.

(2) EC 1662 Primer, 3M Co., or equivalent.

(3) EC 1667 sealant, 3M Co., or equivalent.

(4) Fullerine Wax No. 2 W. P. Fuller Paint Co., or equivalent.

(5) Torque wrench calibrated in inch-pounds.

(6) Wing stand.

C. Preparation.

(1) Open LH WING ANTI-ICE CONTROL, RH WING ANTI-ICE CONTROL, KRUEGER FLAP - CONT and KRUEGER FLAP - POSITION WARN circuit breakers on the main circuit breaker panel. (Hang warning sign on main circuit breaker panel.)

D. Remove Wing Intermediate Leading Edge.

(1) Accomplish the following at inboard end of the intermediate leading edge.

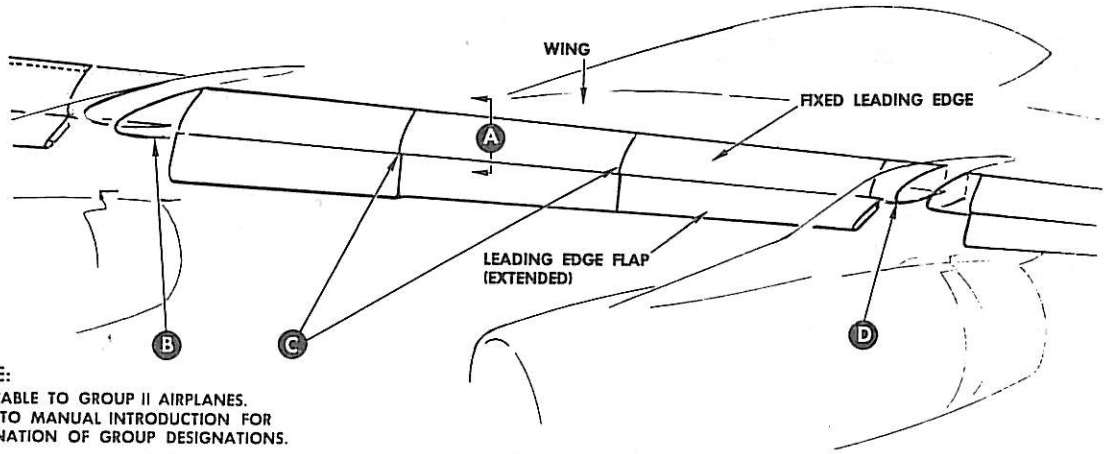
(a) Remove screws securing leading edge-to-pylon stub section, outboard of the inboard pylon; remove stub section. (Bag and tag screws for installation.)

(b) Remove clamp at outboard end of the bellows assembly. (Bag and tag clamp for installation.)

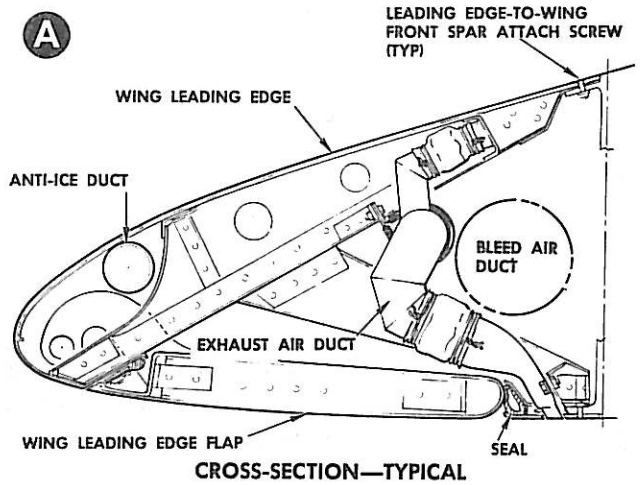
(c) Disconnect hydraulic lines; cover open ends of line.

(d) Disconnect pressure sensor line to anti-ice duct.

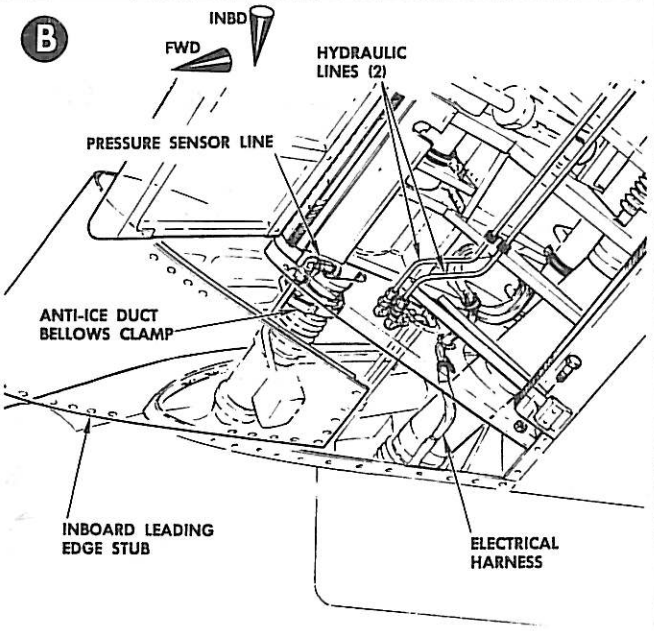
(e) Disconnect anti-ice duct; refer to Chapter 30, ICE AND RAIN PROTECTION.



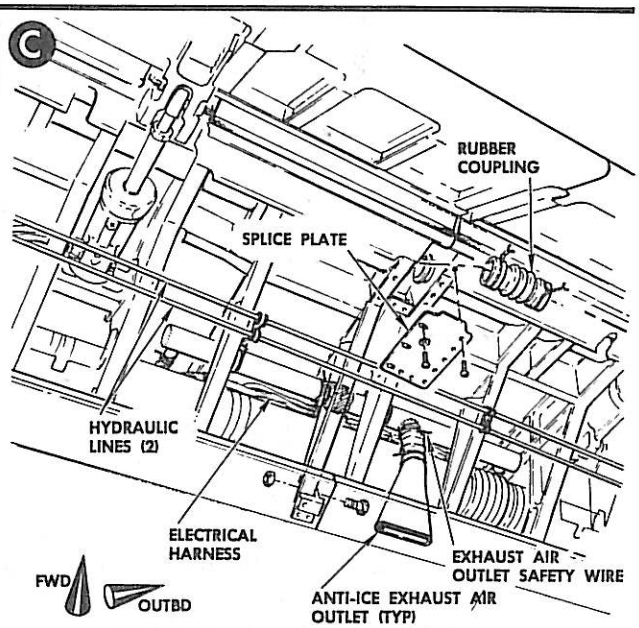
NOTE:
APPLICABLE TO GROUP II AIRPLANES.
REFER TO MANUAL INTRODUCTION FOR EXPLANATION OF GROUP DESIGNATIONS.



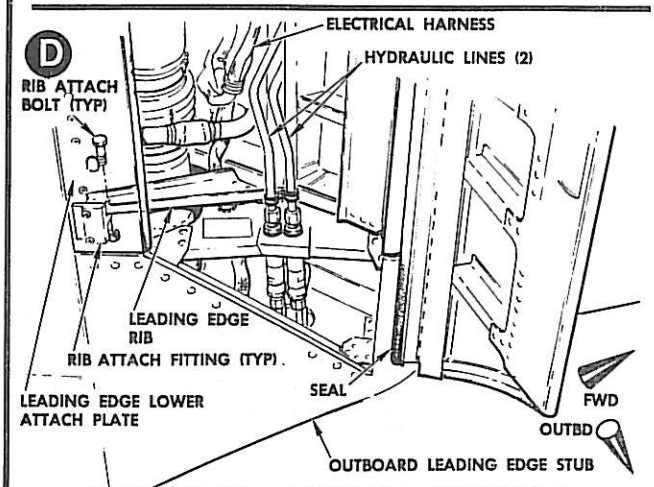
CROSS-SECTION—TYPICAL



INBOARD END—INBOARD INTERMEDIATE LEADING EDGE



INTERMEDIATE LEADING EDGE SPLICE (TYPICAL)



OUTBOARD END—OUTBOARD INTERMEDIATE LEADING EDGE

30.02.57.022

(f) Disconnect wiring to intermediate leading edge sections at electrical connector.

(2) Accomplish the following at splice between the intermediate leading edge sections:

(a) Remove safety wire at each side of bellows assembly; remove bellows assembly.

(b) Remove screws securing splice plate; remove splice plate. (Bag and tag screws and splice plate for installation.)

(c) Disconnect wiring harness at electrical connector.

(d) Disconnect and remove applicable hydraulic lines; cover open ends of lines.

(3) Accomplish the following at outboard end of the intermediate leading edge:

(a) Disconnect hydraulic lines; cover open ends of lines.

(b) Disconnect wiring harness at electrical connector.

(4) At anti-ice exhaust air outlets along lower surface of rear spar, remove safety wire from upper end of sleeves on exhaust air outlet ducts.

(5) Remove bolts attaching each leading edge rib to plate on lower front spar rail. (Bag and tag screws for installation.)

(6) Support leading edge and remove screws attaching upper edge of leading edge to wing front spar. (Bag and tag screws for installation.)

(7) Remove intermediate leading edge.

E. Install Wing Intermediate Leading Edge.

NOTE: Check closing ribs at both ends of each leading edge section and apply EC 1662 and EC 1667, per manufacturer's instruction, to all openings found. Ribs shall be completely sealed.

(1) Check the leading edge chordwise bead seals for condition; replace as required.

(2) Position leading edge on wing front spar and align screw holes on upper spar rail; install screws.

(3) Install bolts attaching each leading edge rib to plate on lower front spar rail.

(4) Install and safety wire upper ends of sleeves on anti-ice exhaust air outlet ducts along lower surface of rear spar.

(5) Accomplish the following at splice between the intermediate leading edge sections.

(a) Connect wiring harness at electrical connector.

(b) Position and connect hydraulic lines.

(c) Clean faying surfaces of splice plate, and mounting surface with a cloth dampened with aliphatic naphtha.

(d) Apply a coat of EC 1662 primer, per manufacturer's instructions, to cleaned area and air dry 30 minutes.

(e) Apply a thin coat of EC 1667, per manufacturer's instructions, to primed surfaces.

(f) Install splice plate, then apply a fillet of EC 1667 sealing compound to completely seal splice plate.

(g) Compress flexible bellows lengthwise and insert between tube ends; slip ends of bellows over tube ends. Secure with at least two turns of safety wire over bellows ends and tube ends.

(6) Accomplish the following at inboard end of the intermediate leading edge:

(a) Install bellows assembly. Install clamps as directed in 57-2-1.

(b) Connect anti-ice duct; refer to Chapter 30, ICE AND RAIN PROTECTION.

(c) Connect pressure sensor line to anti-ice duct.

(d) Connect hydraulic lines.

(e) Connect wiring harness at electrical connector.

(f) Clean sealing compound from inside surface of leading edge-to-pylon stub section and fairing mounting surfaces with a clean cloth dampened with aliphatic naphtha.

(g) Apply a coat of EC 1662 primer, or equivalent, to areas just cleaned. Allow primer to dry for 30 minutes.

(h) Apply a coat of EC 1667 sealing compound, or equivalent, to surfaces cleaned in step (6)(e). Install leading edge-to-pylon stub section.

(7) Accomplish the following at outboard end of the intermediate leading edge:

(a) Connect wiring harness at electrical connector.

(b) Connect hydraulic lines.

(8) Allow sealing compound used in leading edge installation, to cure length of time specified by manufacturer.

(9) Close LH WING ANTI-ICE CONTROL, RH WING ANTI-ICE CONTROL, KRUEGER FLAP-CONT, and KRUEGER FLAP-POSITION WARN circuit breakers on the main circuit breaker panel. (Remove warning sign from circuit breaker.)

(10) Perform leading edge anti-icing temperature sensor test. (Refer to Chapter 30, ICE AND RAIN PROTECTION.)

(11) Perform leading edge flap operational test. (Refer to Chapter 27, FLIGHT CONTROLS.)

WING OUTBOARD LEADING EDGE - MAINTENANCE PRACTICES

1. Removal/Installation (see Figure 201)

A. General.

The wing outboard leading edge extends from the outboard pylon to the wing tip. It consists of two sections spliced together at span midpoint. The leading edge sections may be removed in the following sequence only: The leading edge stub, inboard leading edge section, and the outboard leading edge section. The outboard leading edge section may also be removed by removing the wing tip; refer to Removal/Installation WING TIPS, 57-4-0.

B. Equipment Required.

(1) Aliphatic naphtha, Federal Specification TT-N-95a.

(2) EC 1662 primer, 3M Co., or equivalent.

(3) EC 1667 sealer, 3M Co., or equivalent.

(4) 549 tape, 3M Co., St. Paul, Minn.

(5) Fullerine Wax No. 2, W. P. Fuller Paint Co., or equivalent.

(6) Torque wrench, calibrated in inch-pounds.

(7) Wing stand.

C. Preparation.

(1) Open LH WING ANTI-ICE CONTROL, RH WING ANTI-ICE CONTROL, KRUEGER FLAP - CONT and KRUEGER FLAP - POSITION WARN circuit breakers on the main circuit breaker panel. (Hang warning sign on circuit breaker panel.)

D. Remove Wing Outboard Leading Edge Sections.

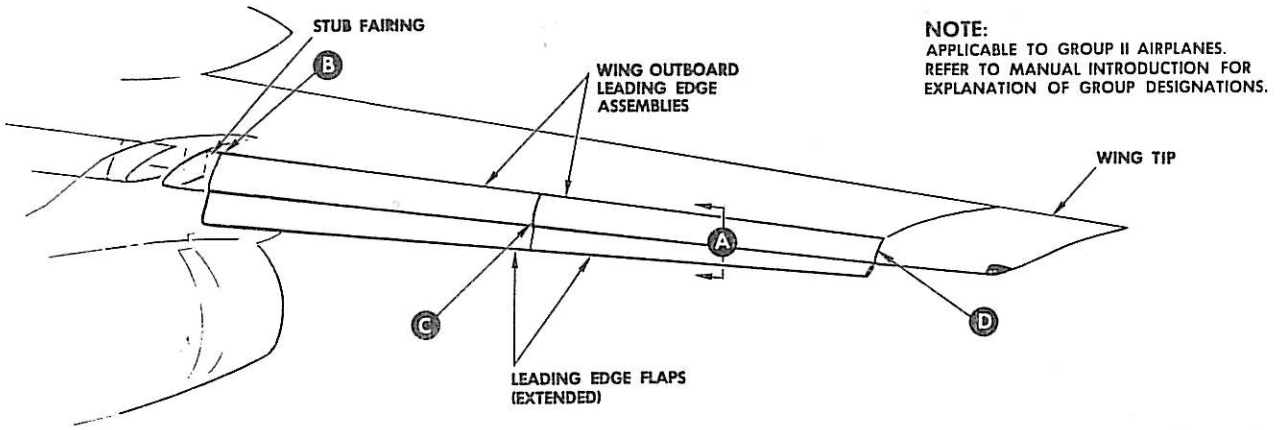
NOTE: Bag and tag screws, clamps, etc., for reinstallation.

(1) Accomplish the following at inboard end of the inboard leading edge section:

(a) Remove leading edge-to-pylon stub fairing.

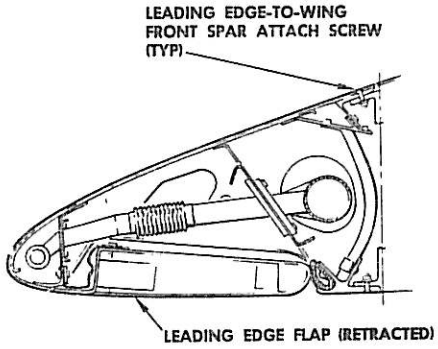
(b) Remove anti-ice duct clamp.

(c) Disconnect wiring harness at electrical splice.



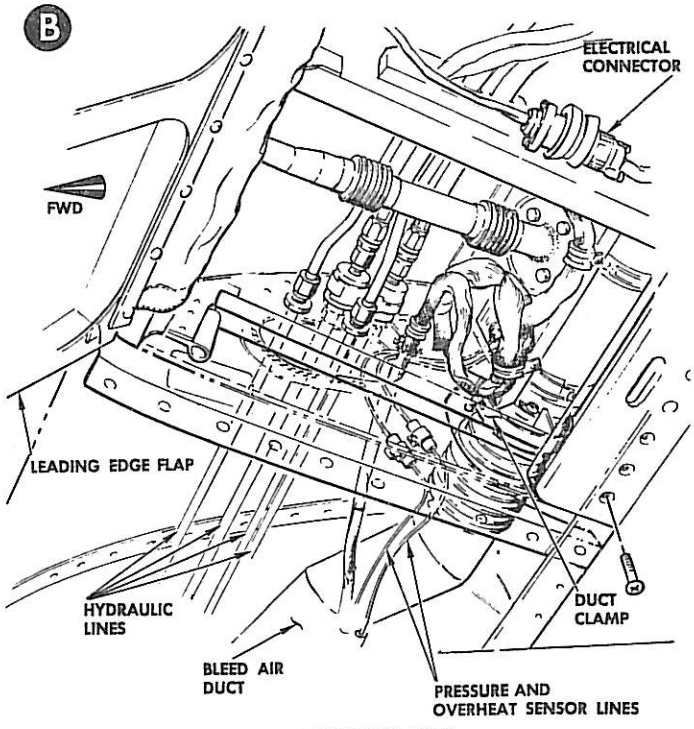
NOTE:
APPLICABLE TO GROUP II AIRPLANES.
REFER TO MANUAL INTRODUCTION FOR EXPLANATION OF GROUP DESIGNATIONS.

A



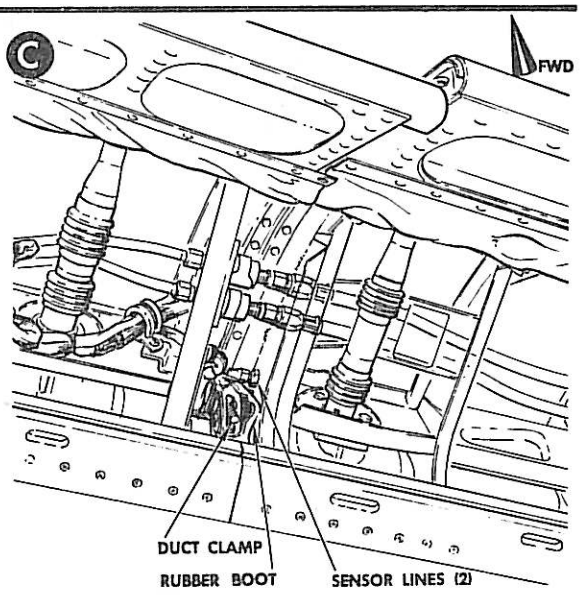
TYPICAL CROSS-SECTION

B



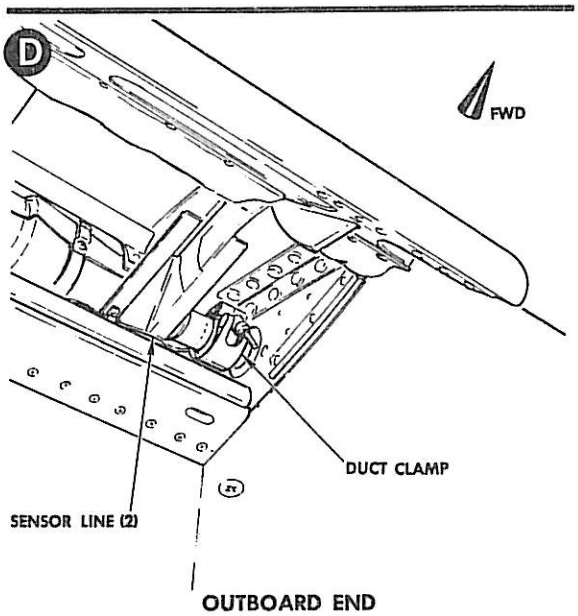
INBOARD END

C



SPLICE AREA

D



OUTBOARD END

30.02.57.023

(d) Disconnect hydraulic lines; cover open ends of lines.

(e) Disconnect pressure sensor line to anti-ice duct.

(f) Disconnect bleed air duct overheat sensing line; refer to Chapter 36, PNEUMATICS.

(2) Accomplish the following at splice between the outboard leading edge sections:

(a) Disconnect wiring harness at electrical splice.

(b) Disconnect hydraulic lines; cover open ends of lines.

(c) Disconnect pressure sensor line; cover open end of line and fitting.

(d) Disconnect bleed air duct overheat sensor line; cover open end of line and fitting.

(e) Cut safety wire; remove rubber boot and remove anti-ice duct clamp.

(3) Remove inboard leading edge section.

(a) Remove screws attaching lower edge of inboard leading edge section to wing front spar.

(b) Support inboard leading edge section and remove screws attaching upper edge of leading edge to wing front spar.

(c) Remove inboard leading edge section.

(4) Accomplish the following at splice between the outboard leading edge section and wing tip:

(a) Remove anti-ice duct clamp.

(b) Remove screws attaching lower edge of outboard leading edge section to wing front spar.

(c) Support outboard leading edge section and remove screws attaching upper edge of leading edge to wing front spar.

(d) Slide outboard leading edge section inboard, forward and off the wing front spar.

E. Install Wing Outboard Leading Edge Sections.

NOTE: If both leading edge sections have been removed, the outboard section must be installed first. Check closing rib at both ends of each outboard leading edge section and apply EC 1662 primer and EC 1667 sealer, per manufacturer's instructions, to all openings found. Ribs shall be completely sealed.

(1) Check the leading edge chordwise bead seals at splice for condition; replace as required.

(2) Position outboard leading edge section on wing front spar and align screw holes.

(3) Install screws attaching upper edge of leading edge to wing front spar.

(4) Install screws attaching lower edge of leading edge to wing front spar.

(5) Position inboard leading edge section on wing front spar and align screw holes.

(6) Repeat steps 1.E.(3) and (4).

(7) Accomplish the following at inboard end of inboard leading edge section:

(a) Clean duct flanges and clamp with a clean cloth dampened with aliphatic naphtha.

(b) Apply a heavy coat of Fullerine Wax No. 2 to inside of clamp.

(c) Align notched portion of clamp flanges with index marks on anti-ice duct; torque clamp bolt 70 to 90 inch-pounds.

(d) Tap clamp with a small mallot to seat flanges into "V" of clamp and retorque clamp bolt 70 to 90 inch-pounds. Repeat until torque is stabilized at 70 to 90 inch-pounds.

(e) Connect pressure sensor line to anti-ice duct.

(f) Connect hydraulic lines.

(g) Connect wiring harness at electrical splice.

(h) Connect bleed air duct overheat sensing element; refer to Chapter 36, PNEUMATICS.

(i) Remove old tape from inside surface of leading edge stub fairing and fairing mounting surface, clean with a clean cloth dampened with aliphatic naphtha.

(j) Install tape 549 to leading edge stub faying surfaces and install leading edge stub fairing.

(8) Accomplish the following at splice between the outboard leading edge sections:

(a) Connect wiring harness at electrical connector.

(b) Connect hydraulic lines.

(c) Connect pressure sensor line.

(d) Clean duct flanges and clamp with a clean cloth dampened with aliphatic naphtha.

(e) Apply a heavy coat of Fullerine Wax No. 2 to inside of clamp.

(f) Align notched portion of clamp flanges with index marks on anti-ice duct; torque clamp bolt 35 to 45 inch-pounds.

(g) Tap clamp with a small mallot to seat flanges into "V" of clamp and retorque clamp bolt 35 to 45 inch-pounds. Repeat until torque is stabilized at 35 to 45 inch-pounds.

(h) Install rubber boot over duct joint and clamp; attach safety wire.

(9) Accomplish the following at splice between the outboard leading edge section and wing tip:

(a) Connect anti-ice duct; refer to Chapter 30, ICE AND RAIN PROTECTION.

(10) Close LH WING ANTI-ICE CONTROL, RH WING ANTI-ICE CONTROL, KRUEGER FLAP - CONT, and KRUEGER FLAP - POSITION WARN circuit breakers on the main circuit breaker panel. (Remove warning sign from circuit breaker panel.)

(11) Perform leading edge anti-ice temperature sensor test. (Refer to Chapter 30, ICE AND RAIN PROTECTION.)

(12) Perform leading edge flap operational test. (Refer to Chapter 27, FLIGHT CONTROLS.)

LEADING EDGE SLATS - DESCRIPTION AND OPERATION

1. General

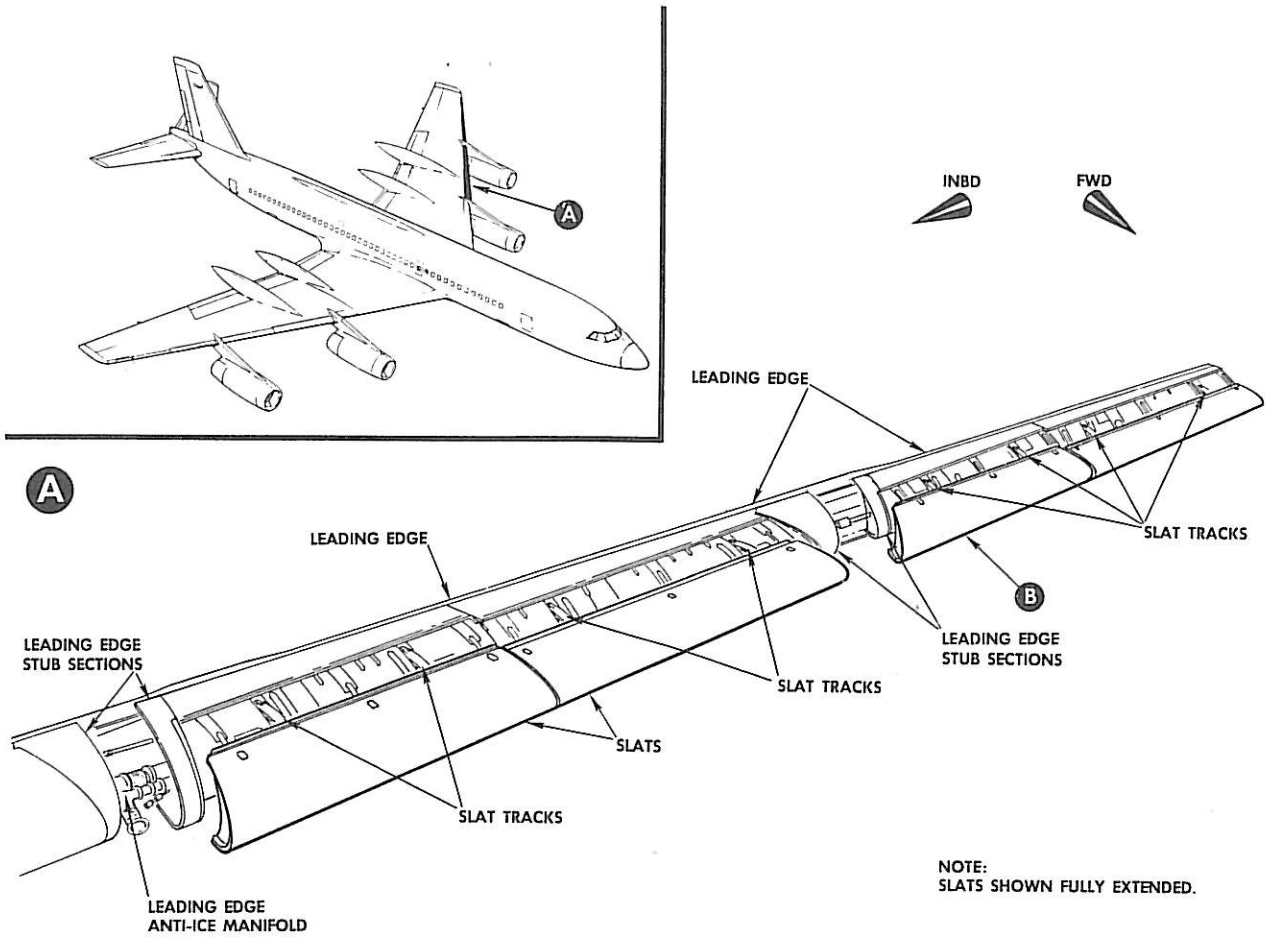
Four movable slats (see Figure 1) are installed on the leading edge of each wing, two between the pylons and two outboard of the outboard pylon. Each slat section fits flush with the wing leading edge contour when retracted and extends down and forward to the extended position. Two tracks which support each slat section attach directly to the slat, and travel on rollers in the wing leading edge fixed structure to extend and retract the slat. The slat drive mechanism consists of two screw jacks for each slat and a torque tube drive system. For description and operation of the slat control system, refer to Chapter 27, FLIGHT CONTROL.

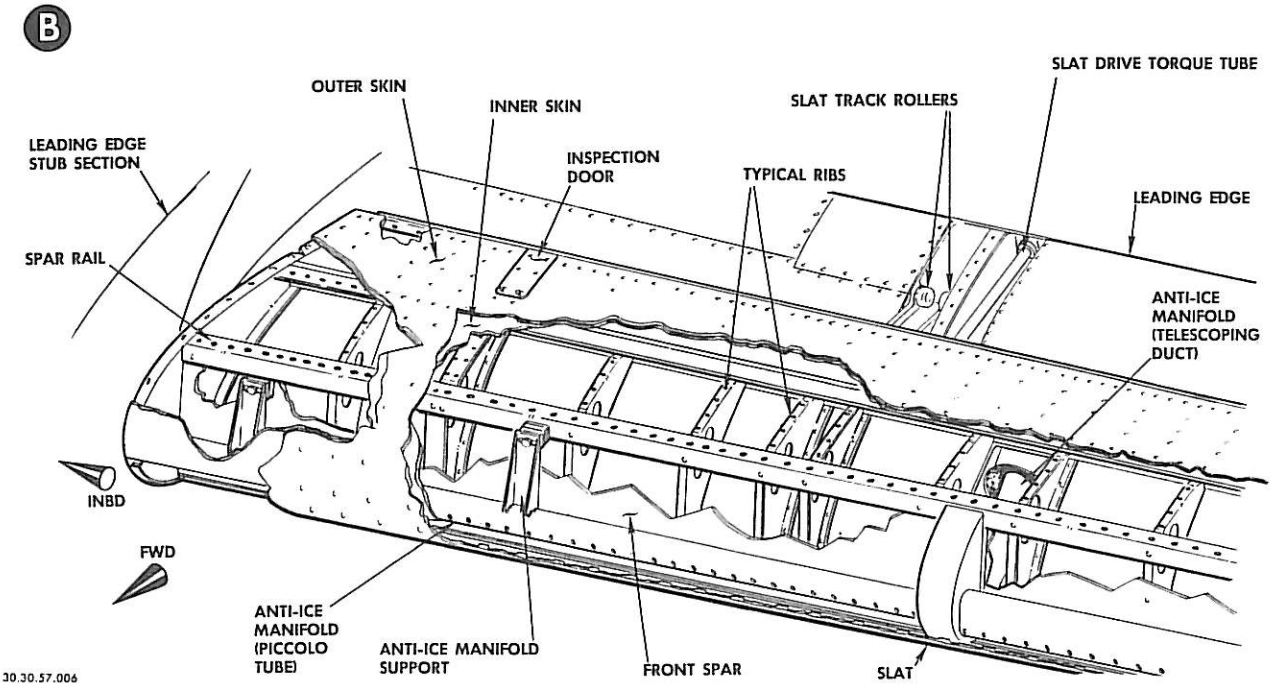
2. Structure

The 2024 aluminum alloy slats are of conventional rib and skin construction. Each slat has a double skinned leading edge. The outer skin is chemically etched on the inner surface and riveted to the inner skin of the slat leading edge, forming a series of chordwise channels. These channels are used for anti-ice airflow. Those ribs which support the slat tracks are aluminum forgings and the slat tracks are steel.

3. Anti-Icing Airflow

Hot engine bleed air routes from the anti-ice duct in the wing leading edge fixed structure and travels through telescoping bellows ducts to a piccolo tube in the slat. Small holes in the forward side of the slat anti-ice piccolo tube directs streams of the heated air forward and into the air channels formed by the chemically etched outer skin. The heated air travels through these slots and exhausts into the exhaust chamber of the fixed leading edge when the slats are retracted, exhausts overboard when the slats are extended. For description and operation of the wing anti-ice system refer to Chapter 30, ICE AND RAIN PROTECTION; refer to 57-2-0 for fixed leading edge anti-icing airflow.


A
INBD
FWD
LEADING EDGE
SLAT TRACKS
B
LEADING EDGE
LEADING EDGE STUB SECTIONS
SLAT TRACKS
LEADING EDGE STUB SECTIONS
SLATS
SLAT TRACKS
LEADING EDGE ANTI-ICE MANIFOLD
NOTE:
SLATS SHOWN FULLY EXTENDED.


B
SLAT DRIVE TORQUE TUBE
OUTER SKIN
INNER SKIN
SLAT TRACK ROLLERS
LEADING EDGE STUB SECTION
INSPECTION DOOR
TYPICAL RIBS
LEADING EDGE
SPAR RAIL
ANTI-ICE MANIFOLD (TELESCOPING DUCT)
INBD
FWD
ANTI-ICE MANIFOLD (PICCOLO TUBE)
ANTI-ICE MANIFOLD SUPPORT
FRONT SPAR
SLAT
30.30.57.006

SLATS - MAINTENANCE PRACTICES

1. Removal/Installation

Refer to Chapter 27, FLIGHT CONTROLS.

2. Inspection/Check

A. Extend the leading edge slats and check the following:

(1) Slat tracks and rollers for cracks, corrosion, and security of attachment.

(2) Slat structure for cracks, loose fasteners, corrosion, and security of attachment.

(3) Slat drive mechanism for condition and security of attachment.

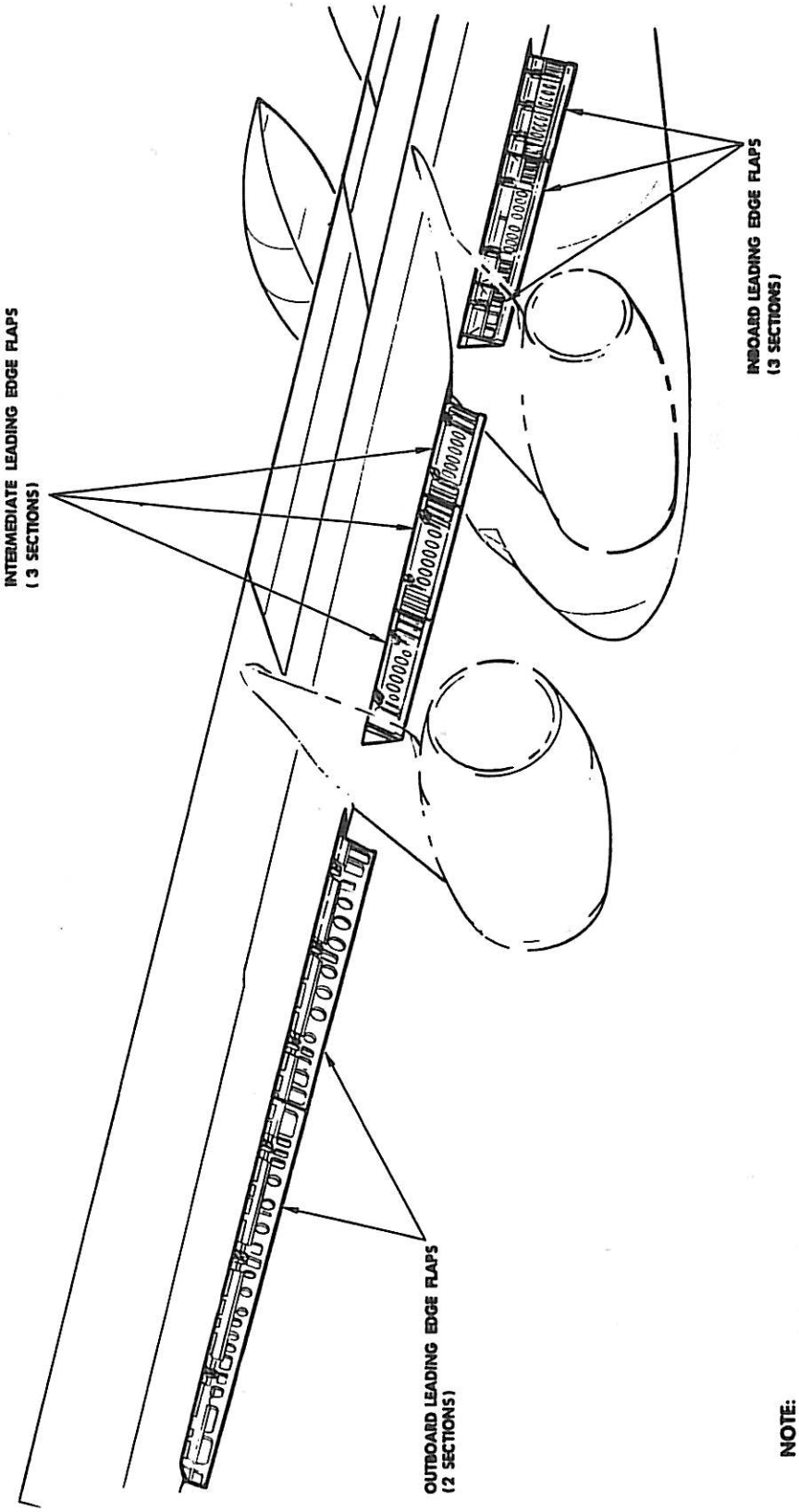
LEADING EDGE FLAPS - DESCRIPTION AND OPERATION

1. General

Leading edge flaps (see Figure 1) are installed on the lower surface of the leading edge section of each wing. Each flap section fits flush with the wing leading edge contour when retracted and extends down and forward to the extended position. The flaps are hinge mounted to the forward portion of the leading edge section and are operated by a flap drive assembly. For description and operation of the leading edge flap control system, refer to Chapter 27, FLIGHT CONTROLS.

2. Structure

The flaps are of the conventional rib and skin construction, using 2024 aluminum alloy.


INTERMEDIATE LEADING EDGE FLAPS
(3 SECTIONS)
INBOARD LEADING EDGE FLAPS
(3 SECTIONS)
OUTBOARD LEADING EDGE FLAPS
(2 SECTIONS)
NOTE:
APPLICABLE TO GROUP II AIRPLANES.
REFER TO MANUAL INTRODUCTION FOR
EXPLANATION OF GROUP DESIGNATIONS.
30.02.57.020

LEADING EDGE FLAPS - MAINTENANCE PRACTICES

1. Removal/Installation

   Refer to Chapter 27, FLIGHT CONTROLS.

2. Inspection/Check

   A. Extend the leading edge flaps and check the following:

      (1) Flap structure for cracks, loose fasteners, corrosion, and security of attachment.

      (2) Flap drive mechanism for condition and security of attachment.

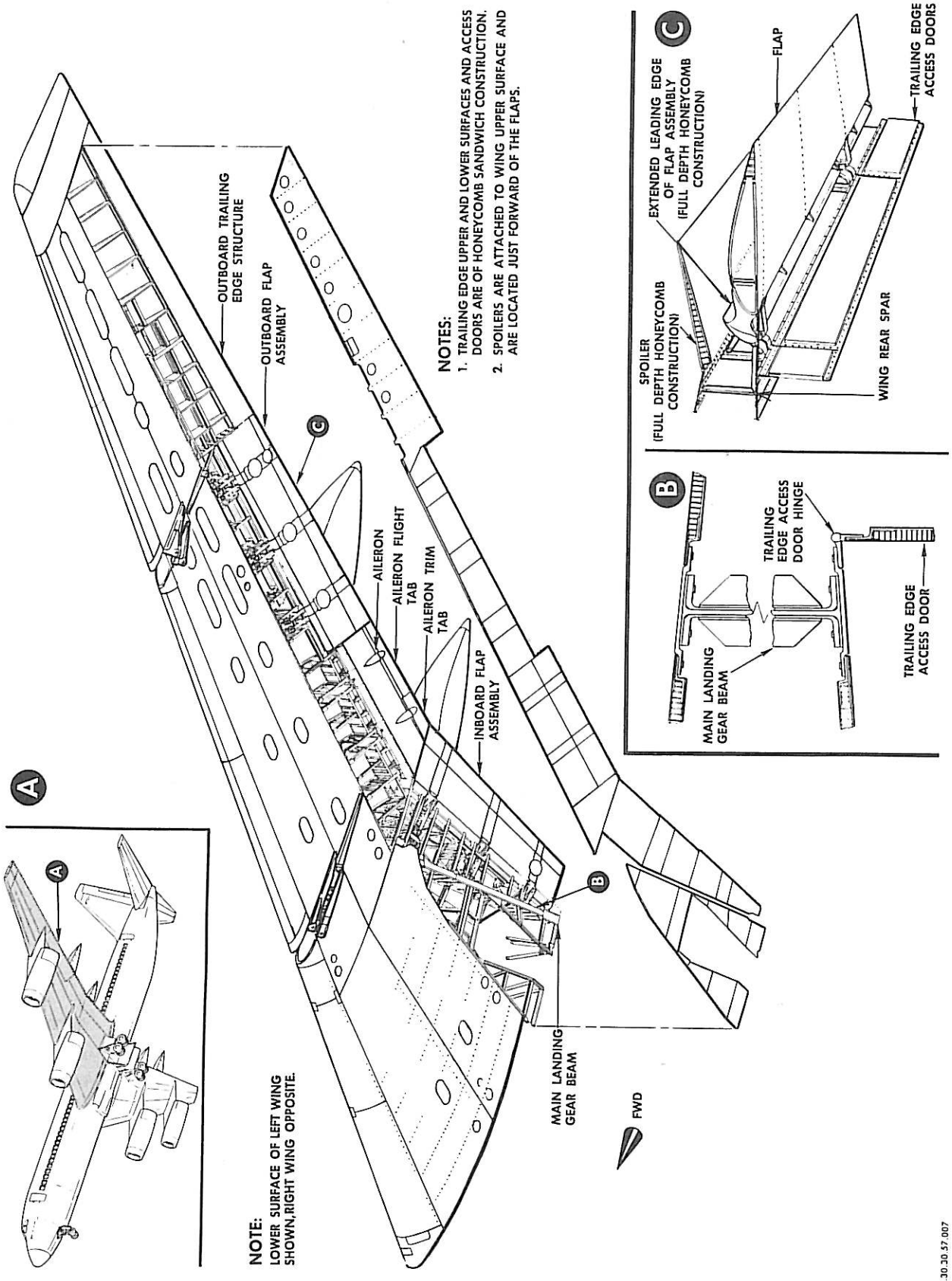
WING TRAILING EDGE - DESCRIPTION AND OPERATION

1. General

The trailing edge section (see Figure 1) completes the aerodynamic contour of the wing and provides the supporting structure for the wing control surfaces. Honeycomb skin panels, built-up ribs, and formers constitute the basic fixed trailing edge structure. The control surface hinge supports also double as trailing edge ribs. The main landing gear beam extends diagonally through the inboard portion of trailing edge structure, thus providing additional strength in the inboard trailing edge area. A full depth honeycomb wedge approximately 10 inches wide constitutes the trailing edge closing strip, outboard of the outboard flap. This closing strip attaches to the aft ends of the outboard trailing edge ribs. In general, 2024 aluminum alloy is used throughout.

The lower surface of the trailing edge section, forward of the flaps and aileron, is hinged for ready access to interior structure and equipment. The lower surface honeycomb panels outboard of the outboard flap are attached with screws and are readily removable. A round inspection door between each rib in the outboard trailing edge section immediately aft of the wing rear spar facilitates inspection.

The honeycomb panels consist of an inner and outer skin bonded to a honeycomb core. All rivet or screw attachment points are reinforced with an internal doubler on the inner surface and full-depth, aluminum bushings through the honeycomb core. This reinforcement prevents the panels from being crushed. The panels are also finished with a closing strip around the edges for the same purpose.



Wing Trailing Edge Structure
Figure 1

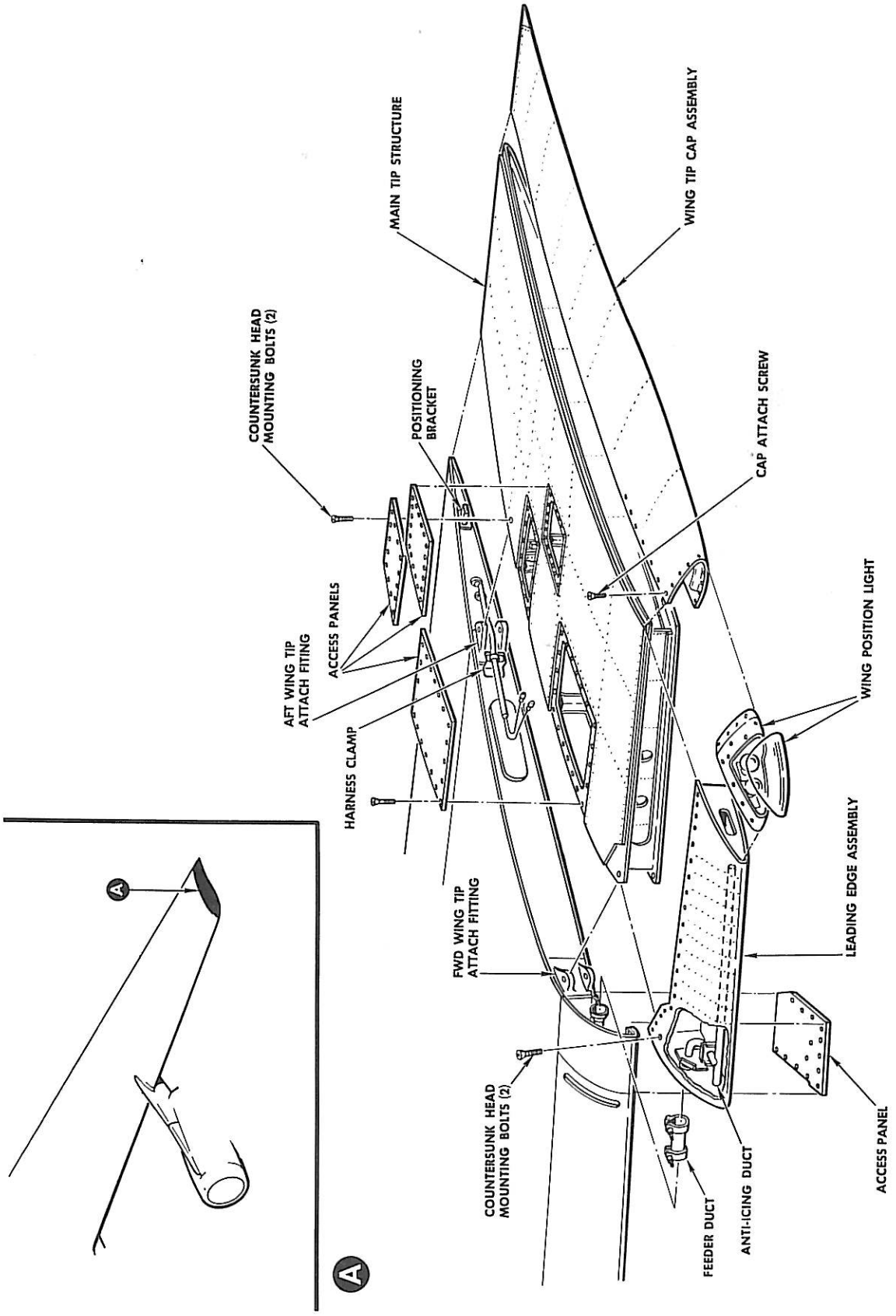
WING TIPS - DESCRIPTION AND OPERATION

1. General

The wing tip assembly (see Figure 1) is of all-metal construction using 2024 aluminum alloy throughout. It consists of an interspar section, a leading edge section and a wing tip cap. The leading edge section includes provisions for hot air anti-icing. A position light is provided in the extreme forward end of the wing tip cap. The wing tip assembly is secured to the outboard end of the wing interspar assembly (wing station 688) by four countersunk head bolts.

2. Structure

The basic wing tip structure consists of a front and rear built-up spar supported by three chordwise ribs. Spanwise formers are used between the ribs in lieu of stringers. The tip leading edge is similar to that of the main wing leading edges. The outer skin is chemically milled on the inner side to produce a series of chordwise air channels for anti-icing hot airflow. The wing tip cap is a formed and riveted assembly with spanwise internal stiffeners. Both the leading edge section and the wing tip cap attach to the interspar section of tip assembly with screws.


MAIN TIP STRUCTURE
WING TIP CAP ASSEMBLY
COUNTERSUNK HEAD MOUNTING BOLTS (2)
POSITIONING BRACKET
CAP ATTACH SCREW
AFT WING TIP ATTACH FITING
ACCESS PANELS
HARNESS CLAMP
WING POSITION LIGHT
FWD WING TIP ATTACH FITTING
LEADING EDGE ASSEMBLY
COUNTERSUNK HEAD MOUNTING BOLTS (2)
FEEDER DUCT
ANTI-ICING DUCT
ACCESS PANEL
A
A
22.02.57.035 A

WING TIP - MAINTENANCE PRACTICES

1. Removal/Installation (see Figure 201)

A. General.

Except for electrical connections to the remote compass system transmitters in the right wing tip, removal and installation procedures for both wing tips are identical.

B. Equipment Required.

(1) Aliphatic Naphtha, Federal Specification TT-N-95A.

(2) Fullerine Wax No. 2, W. P. Fuller Paint Co., or equivalent.

(3) EC 1662 primer, 3M Co., or equivalent.

(4) EC 1667 sealing compound, 3M Co., or equivalent.

(5) Torque wrench calibrated in inch-pounds.

(6) Wing stand.

C. Preparation.

(1) Open POS LTS circuit breaker on the main circuit breaker panel in the flight compartment. (Hang warning sign on circuit breaker panel.)

(2) If removing right wing tip, open PILOT and CO-PILOT REMOTE COMPASS circuit breakers on the main circuit breaker panel.

D. Remove Wing Tip.

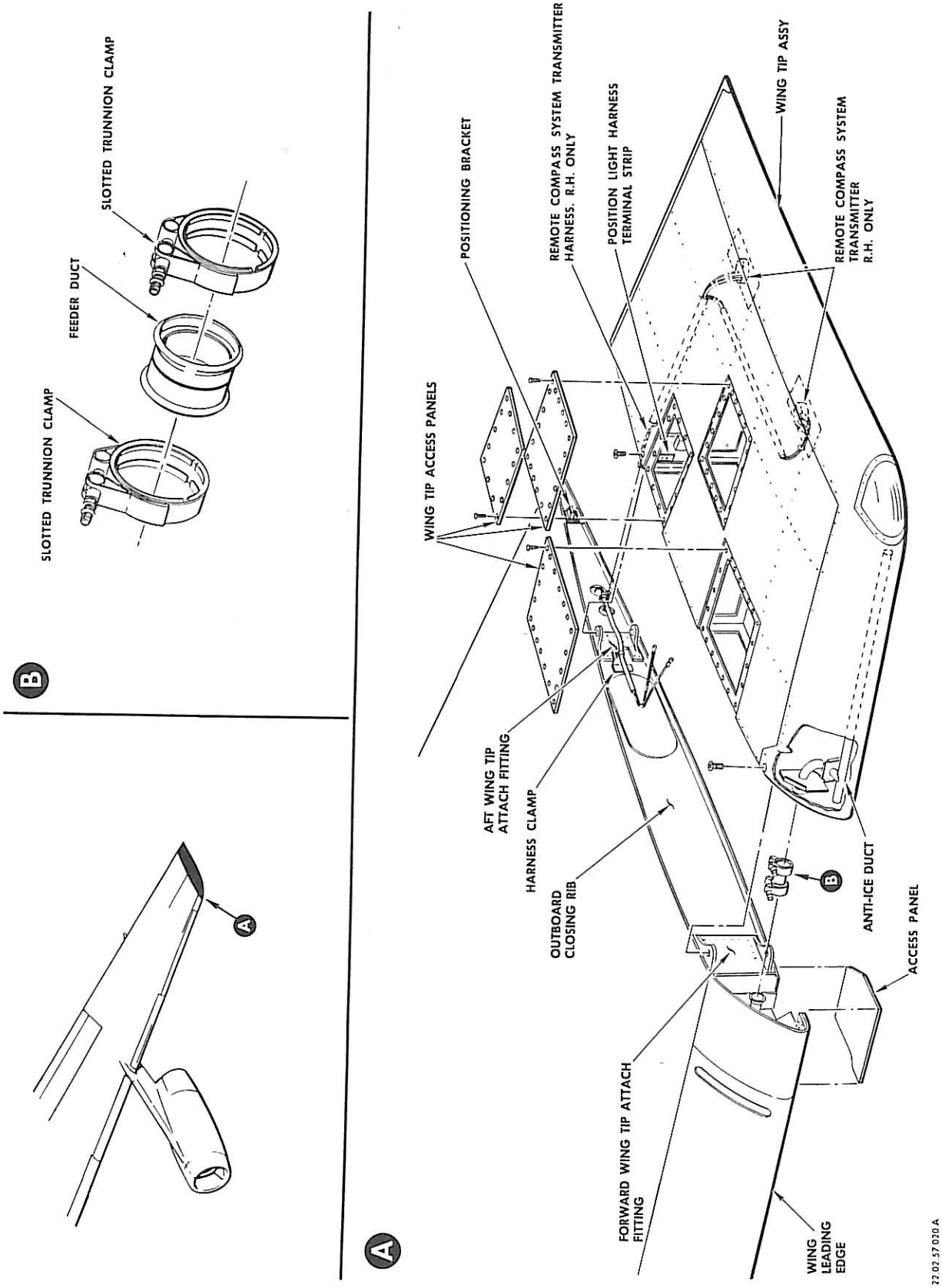
(1) Remove screws attaching access panels (three places) to upper surface of wing tip; remove access panels. (Bag and tag screws for installation.)

NOTE: The right wing tip has an additional access panel on its upper surface for access to the pilot's and copilot's remote compass transmitters and terminal strip.

(2) Remove screws attaching access panel to lower surface of outboard end of wing leading edge at wing tip intersection; remove access panel.

(3) Remove clamps at each end of the feeder duct; remove feeder duct. (Tag clamps and feeder duct for installation.)

(4) Disconnect position light harness at terminal strip. (Tag wires for installation.)


B
SLOTTED TRUNNION CLAMP
FEEDER DUCT
SLOTTED TRUNNION CLAMP
A
WING TIP ACCESS PANELS
POSITIONING BRACKET
REMOTE COMPASS SYSTEM TRANSMITTER HARNESS. R.H. ONLY
POSITION LIGHT HARNESS TERMINAL STRIP
WING TIP ASSY
REMOTE COMPASS SYSTEM TRANSMITTER R.H. ONLY
AFT WING TIP ATTACH FITTING
HARNESS CLAMP
OUTBOARD CLOSING RIB
ANTI-ICE DUCT
ACCESS PANEL
FORWARD WING TIP ATTACH FITTING
WING LEADING EDGE
22.02.57.020 A

(5) If removing the right wing tip, disconnect electrical harness to pilot's and copilot's remote compass transmitters at terminal strip. (Tag wires for installation.)

(6) Remove the two countersunk head bolts in lower surface of the wing tip attaching tip to the wing interspar assembly. (Bag and tag bolts for installation.)

(7) Support the wing tip and remove the two countersunk head bolts in upper surface of wing tip attaching tip to the wing interspar assembly. (Bag and tag bolts for installation.)

(8) Slide wing tip outboard and lower free of airplane.

E. Install Wing Tip.

(1) Check beadseals on wing tip for condition; replace as required.

(2) Position wing tip at a point where electrical harness(es) can be positioned in wing tip; position harness.

(3) Install countersunk head bolts through attach fittings in wing tip upper and lower surfaces.

(4) Connect position light harness to terminal strip.

(5) If installing the right wing tip, also connect electrical harness to the pilot's and copilot's remote compass system transmitter terminal strips.

(6) Reinstall access panels in upper surface of wing tips.

(7) Accomplish the following at splice between the outboard leading edge and wing tip:

(a) Clean the anti-ice duct flanges, feeder duct flanges, and clamps with a clean cloth dampened with aliphatic naphtha.

(b) Apply a heavy coat of Fullerine Wax No. 2, or equivalent, to inside of each clamp "V."

(c) Position feeder duct and install clamps.

(d) Torque clamps to 45 inch-pounds.

(e) Tap clamps with a small mallet to seat flanges into "V" of clamps and retorque clamp bolts to 45 inch-pounds; repeat until torque is stabilized at 45 inch-pounds.

(f) Clean faying surface of access plate and mounting surface with a clean cloth dampened with aliphatic naphtha.

(g) Apply EC 1662, per manufacturer's instructions, to cleaned area. Allow primer to air dry for 30 minutes.

(h) Apply a thin coat of EC 1667 sealing compound, or equivalent, per manufacturer's instructions to faying surface of access plate: install access plate.

(8) Close POS LTS circuit breaker on the main circuit breaker panel. (Remove warning sign from circuit breaker panel.)

(9) If installing right wing tip, close PILOT and COPILOT REMOTE COMPASS circuit breakers on the main circuit breaker panel.

(10) Perform adjustment/test procedures for position lights (refer to Chapter 33, LIGHTS).

(11) If installing the right wing tip, perform adjustment/test procedure for the remote compass system (refer to Chapter 34, NAVIGATION).

2. Inspection/Check

A. Access.

Remove access panels in upper surface of wing tip.

B. Check the following:

(1) Security of attachment to the wing interspar assembly.

(2) Exterior surfaces for cracks, corrosion, and loose fasteners.

(3) Interior structure for cracks, corrosion, and loose fasteners.

(4) In the right wing tip, check remote compass system transmitters for security of attachment.

AILERONS - DESCRIPTION AND OPERATION

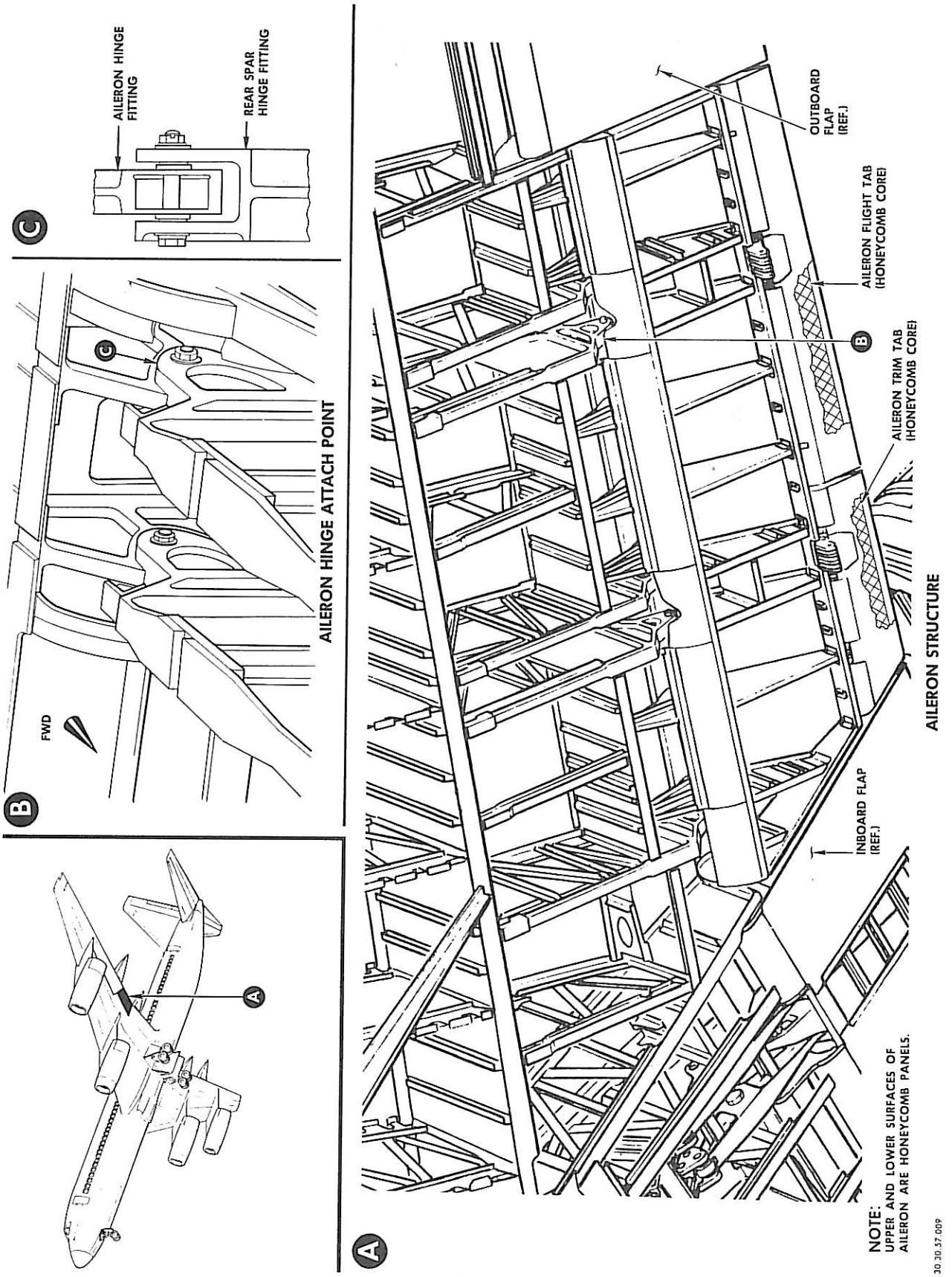
1. General

The ailerons are located between the inboard and outboard flaps on each wing (see Figure 1). They are supported by the wing rear spar through forged ribs containing hinge fittings. Five hinges, two at the outboard end, two at the center and one at the inboard end of each aileron, attach the aileron to the wing trailing edge structure. This method of attachment provides three-hinge support with fail-safe double hinges at the outboard and center locations. Weights are attached to the aileron leading edge balance boards to provide static balance. Fabric curtains are installed between the aileron and balance board bays in the wing trailing edge to smooth the airflow over the ailerons.

Trim and control tabs constitute the aileron trailing edge, the trim tab being in the inboard position. The trim tab is attached to the aileron at three hinge points, the flight tab at four hinge points. The flight tab is statically balanced with counter-weights in its leading edge; the trim tab is not balanced. For description and operation of the aileron control system, refer to Chapter 27, FLIGHT CONTROL.

2. Structure

The ailerons consist of built-up and formed spars, ribs and honeycomb skin panels. The main spar is of built-up construction; the rear spar is a formed channel. Ribs maintain chordwise contour of the aileron. Honeycomb skin panels make up the upper and lower surfaces aft of the main spar. The balance board portion of the aileron, forward of the main spar, is of honeycomb sandwich construction. In general, 2024 aluminum alloy is used throughout the aileron basic structure. Tab structure is of full depth honeycomb with a formed channel leading edge.


AILERON HINGE FITTING
REAR SPAR HINGE FITTING
C
AILERON HINGE ATTACH POINT
FWD
B
A
OUTBOARD FLAP (REF.)
AILERON FLIGHT TAB (HONEYCOMB CORE)
AILERON TRIM TAB (HONEYCOMB CORE)
INBOARD FLAP (REF.)
AILERON STRUCTURE
NOTE:
UPPER AND LOWER SURFACES OF AILERON ARE HONEYCOMB PANELS.
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AILERONS - MAINTENANCE PRACTICES

1. Removal/Installation

   Refer to Chapter 27, FLIGHT CONTROLS.

2. Inspection/Check

   A. Access.

      (1) Open and/or remove wing trailing edge access panels and doors forward of the ailerons.

      (2) Remove screw attached honeycomb skin panels from ailerons.

   B. Check the Following:

      (1) Aileron, aileron flight tab and trim tab hinges for condition and security of attachment.

      (2) Aileron, aileron flight tab and trim tab structure for cracks, corrosion and loose fasteners.

      (3) Balance curtains, restrictors and bonding jumpers for condition and security of attachment.

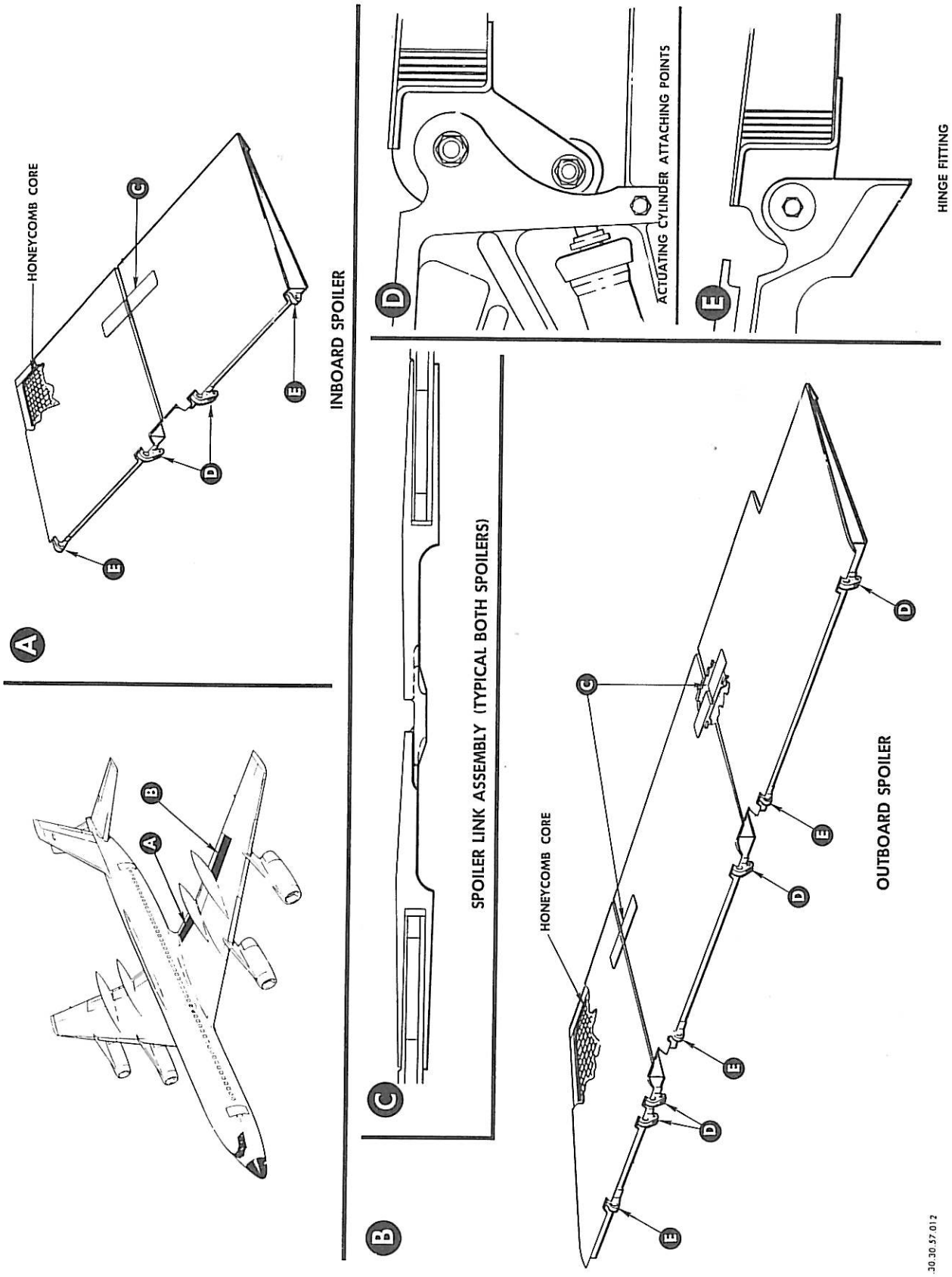
SPOILERS - DESCRIPTION AND OPERATION

1. General

Two spoilers located on the upper surface of each wing trailing edge forward and above the inboard and outboard flaps are hydraulically operated, and may be used symmetrically as speed brakes or differentially to augment aileron control for lateral stability. The outboard spoilers are divided into three sections, the inboard spoilers into two sections (see Figure 1) connected by means of expansion links. The expansion links allow the spoilers to flex during wing bend. The three spoiler sections over the outboard flap are hinged as follows: Each outboard section is hinged at two points; the inboard section is hinged at three points. Each spoiler section over the inboard flap is hinged at two points. For description and operation of the spoiler control system, refer to Chapter 27, FLIGHT CONTROL.

2. Structure

The spoilers are of full-depth honeycomb construction, tapered in thickness towards their trailing edge. The maximum depth is approximately three and one-half inches immediately aft of the hinges and tapers to a fine closing strip at the trailing edge. With the exception of a channel closing strip or spar at the leading edge and the wedge shaped strips at the edges, there is no internal structure except the honeycomb core. In general, 2024 aluminum alloy is used throughout. The inges and expansion link fittings are 7075 aluminum alloy machined forgings; the expansion link is corrosion resistant steel.



Spoiler Structure
Figure 1

SPOILERS - MAINTENANCE PRACTICES

1. Removal/Installation

Refer to Chapter 27, FLIGHT CONTROLS.

2. Inspection/Check

A. Access.

Raise spoilers and install 22J 115 spoiler actuator lock or equivalent, at each pair of spoiler actuators.

B. Check the following:

(1) Spoiler hinges and actuators for condition and security of attachment.

(2) Followup linkage for condition and security of attachment.

(3) Spoiler structure for cracks, corrosion and loose rivets. In addition, check links connecting spoiler sections together and bonding jumpers for condition and security of attachment.

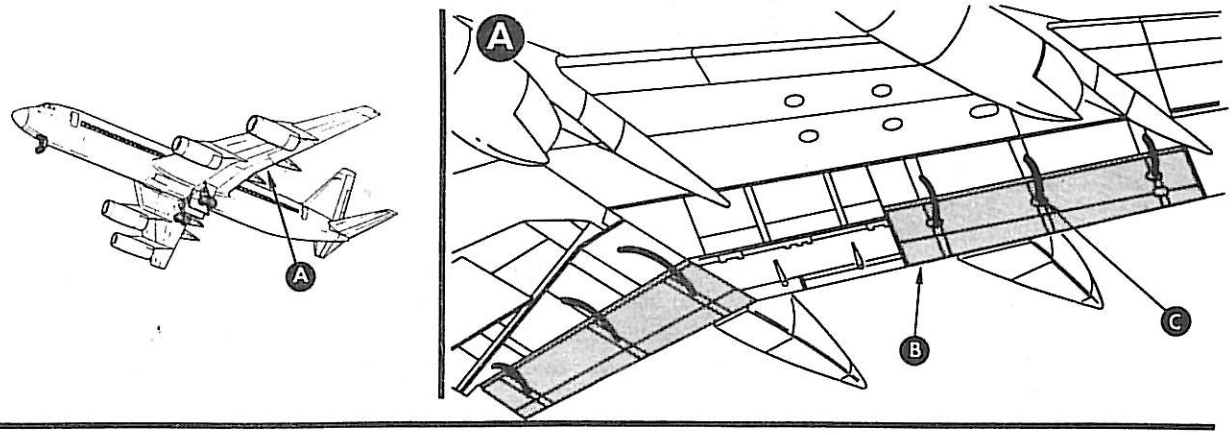
WING FLAPS - DESCRIPTION AND OPERATION

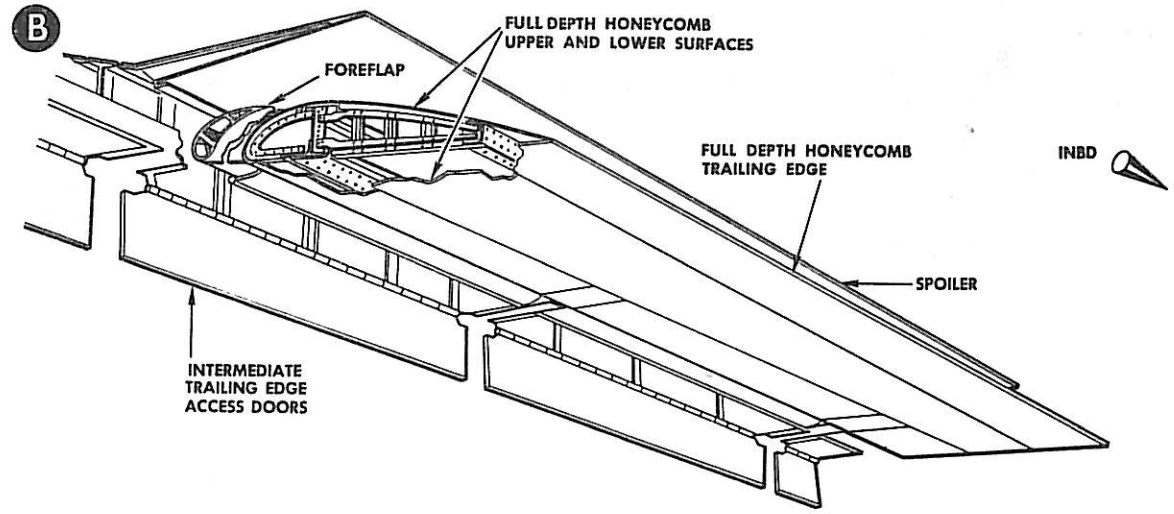
1. General

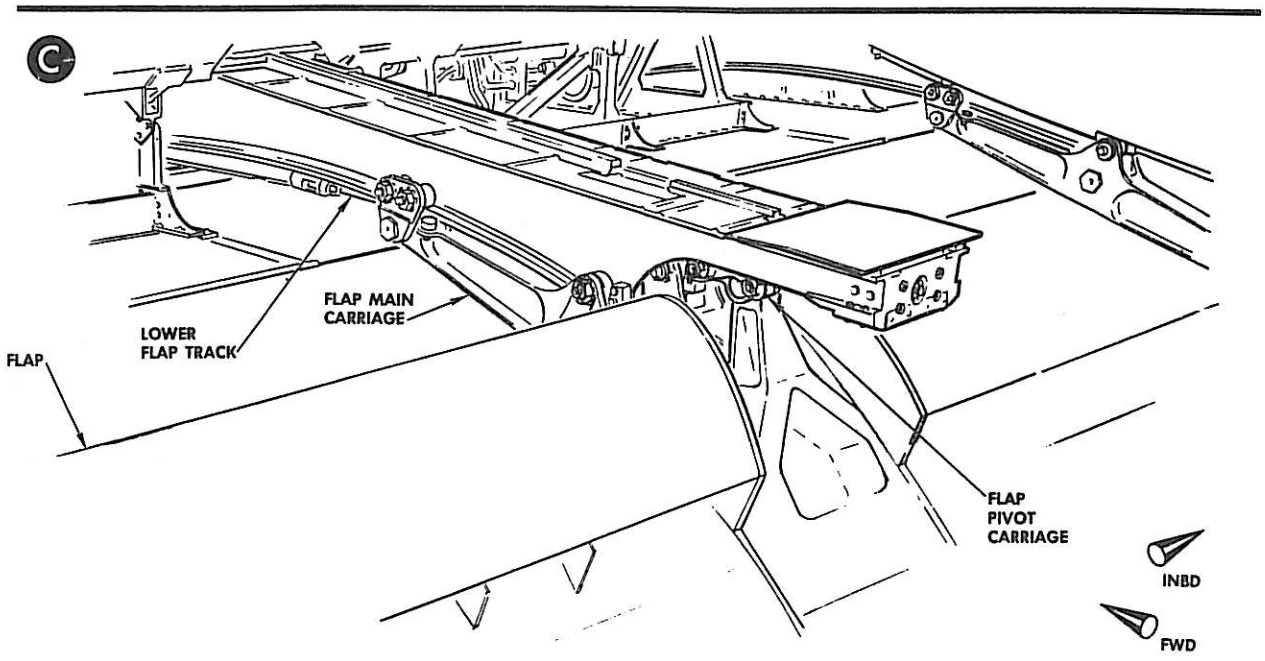
The flap arrangement consists of one flap mounted inboard and another mounted outboard of the aileron. Both flaps include slat-like airfoil sections, or foreflaps, on their forward edge. These foreflaps provide an additional airfoil section to direct airflow over the flap when flaps are lowered. Steel tracks attached to the wing rear spar and main landing gear beam provide flap support. Three tracks support the outboard flap and three tracks support the inboard flap. The slat-like foreflaps are rigidly attached to the forward portion of each main flap and are exposed only when the flaps are lowered.

2. Structure

The flap structure consists of a built-up front spar and a formed channel rear spar supported by formed ribs. The flap leading edge, trailing edge, foreflap, and the upper and lower surface skin panels are full-depth honeycomb construction. The flap is basically constructed from 2024 aluminum alloy materials. For description and operation of the flap control system, refer to Chapter 27, FLIGHT CONTROL.







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FLAP TRACK TYPICAL

FLAPS - MAINTENANCE PRACTICES

1. Removal/Installation

   Refer to Chapter 27, FLIGHT CONTROLS.

2. Inspection/Check

   A. Access.

      (1) Lower flaps and open wing trailing edge access doors in wing lower surface, forward of the flaps.

      (2) Remove screw attached honeycomb skin panels from flaps.

   B. Check the Following:

      (1) Flap tracks and supporting structure for condition and security of attachment.

      (2) Flap carriages and screw jacks for condition and security of attachment.

      (3) Abrasion of flap skin at contact with the wing trailing edge seal. In addition, check seal for condition and security of attachment.

      (4) Flap structure for cracks, corrosion and loose fasteners. Check foreflap sections for security of attachment.

ANTI-SHOCK BODIES - DESCRIPTION AND OPERATION

1. General

Two anti-shock bodies (ASB) are installed on the upper surface of each wing, parallel to the fuselage at wing station 204 and wing station 407 to delay the formation of shock waves on the wing and to provide additional fuel storage. Aerodynamic smoothness is maintained by a sponge rubber seal between the ASB and the wing surface; see Figures 201 and 202.

In shape the ASB's resemble an overturned canoe, pointed on each end and flat on the under surface. The forward end forms a fairing which houses the fuel and vent lines. The inboard ASB is 22 feet, 10 inches long, and 40 inches wide at the widest diameter. The outboard ASB is 24 feet, 6 inches long, and 51 inches wide at the widest diameter.

2. Structure

Construction is of conventional built-up type employing 2024 aluminum alloy skins and frames. The floors or lower skins are honeycomb construction. Scotchweld prime and tape is placed between all faying surfaces before the assembly is riveted. After riveting, the entire assembly is placed in an oven and baked to cure the Scotchweld prime and tape.

ANTI-SHOCK BODIES - MAINTENANCE PRACTICES

1. Removal/Installation

A. General.

The outboard anti-shock body (ASB) is attached to the wing by bolts to a single fitting at the center spar and two fittings at the rear spar. The forward fairing is bolted to the wing skin (see Figure 201).

The inboard ASB is attached to the wing by bolts. The forward end is attached to two fittings installed on the rear spar. The aft attach fittings are bolted to an auxiliary spar between the trailing edge ribs aft of the flap drive torque tube. The forward portion is bolted to a wing stringer (see Figure 202).

B. Equipment Required.

(1) Aliphatic Naphtha, Federal Specification TT-N-95A.

(2) EC 1293 sealing compound, 3M Co., or equivalent.

(3) Torque wrench calibrated in inch-pounds.

(4) Web slings for removal and installation of ASB (fabricate locally).

C. Preparation.

(1) Lower flaps and open wing trailing edge access doors in wing lower surface, forward of the flaps.

(2) Open all fuel control circuit breakers on the main circuit breaker panel. (Hang warning sign on circuit breaker panel.)

(3) The anti-shock body fuel tank to be removed must be drained and inerted before proceeding with the following steps. Refer to Chapter 28, FUEL, for instructions.

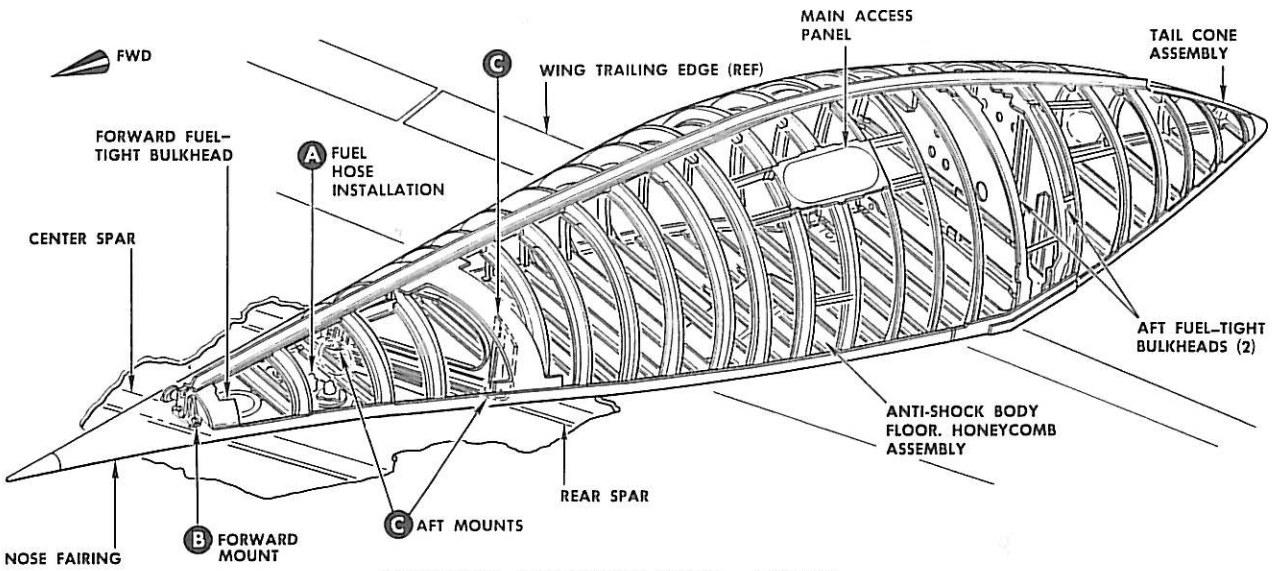
(4) If removing the outboard anti-shock body, the wing outboard main fuel tank must be drained and inerted as directed in Chapter 28, FUEL.

D. Remove Outboard Anti-Shock Body.

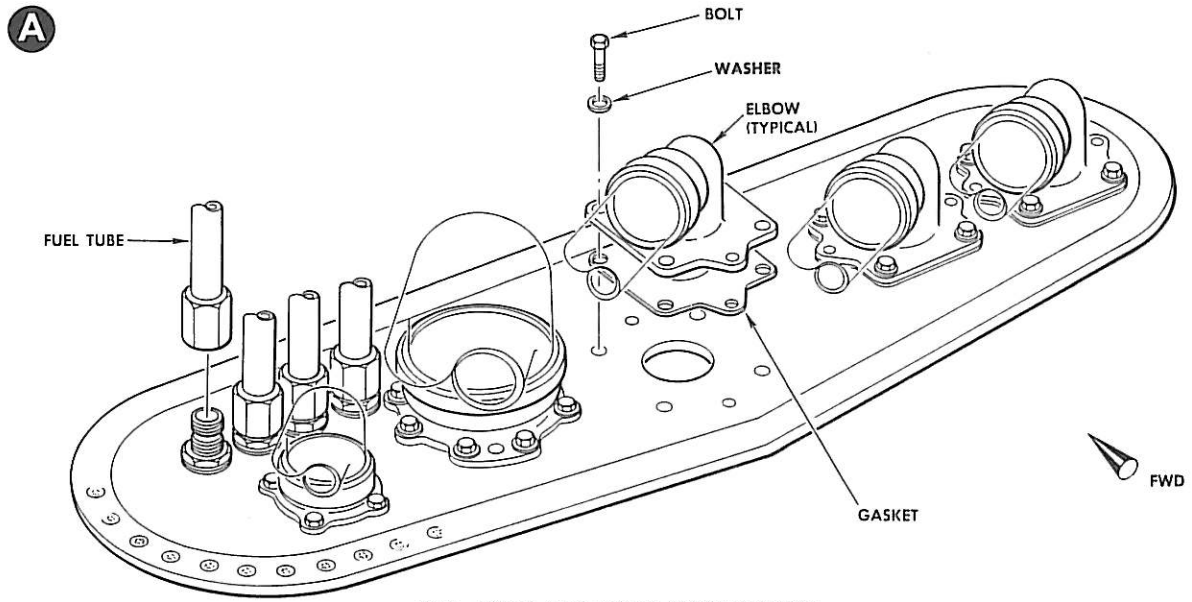
WARNING: OBSERVE ALL ENTRANCE PRECAUTIONS GIVEN IN CHAPTER 28, FUEL.

(1) Disconnect electrical leads to anti-shock body, located aft of rear spar under ASB. (Tag wires for installation.)

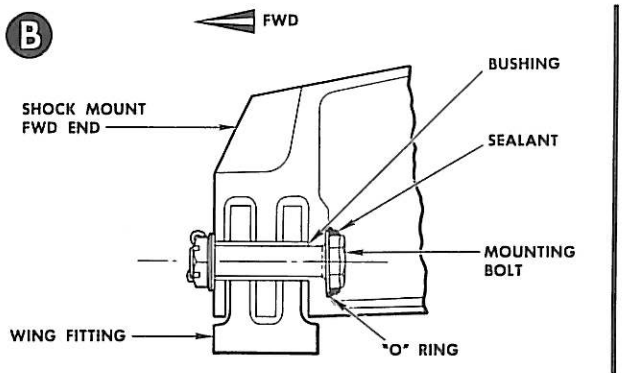
(2) Remove ASB nose fairing and small access panel just aft of fairing. (Bag and tag screws for installation.)



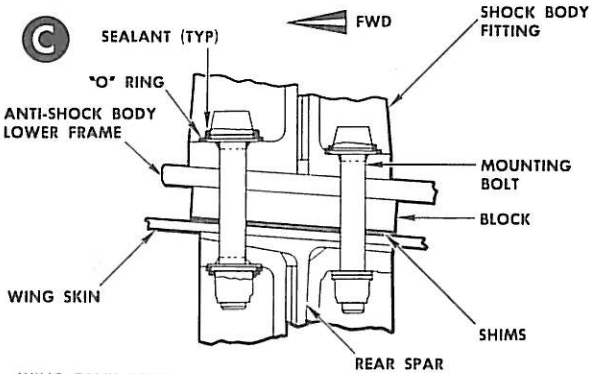
OUTBOARD ANTI-SHOCK BODY----TYPICAL



FUEL HOSE AND TUBE INSTALLATION



FORWARD MOUNT



AFT MOUNT

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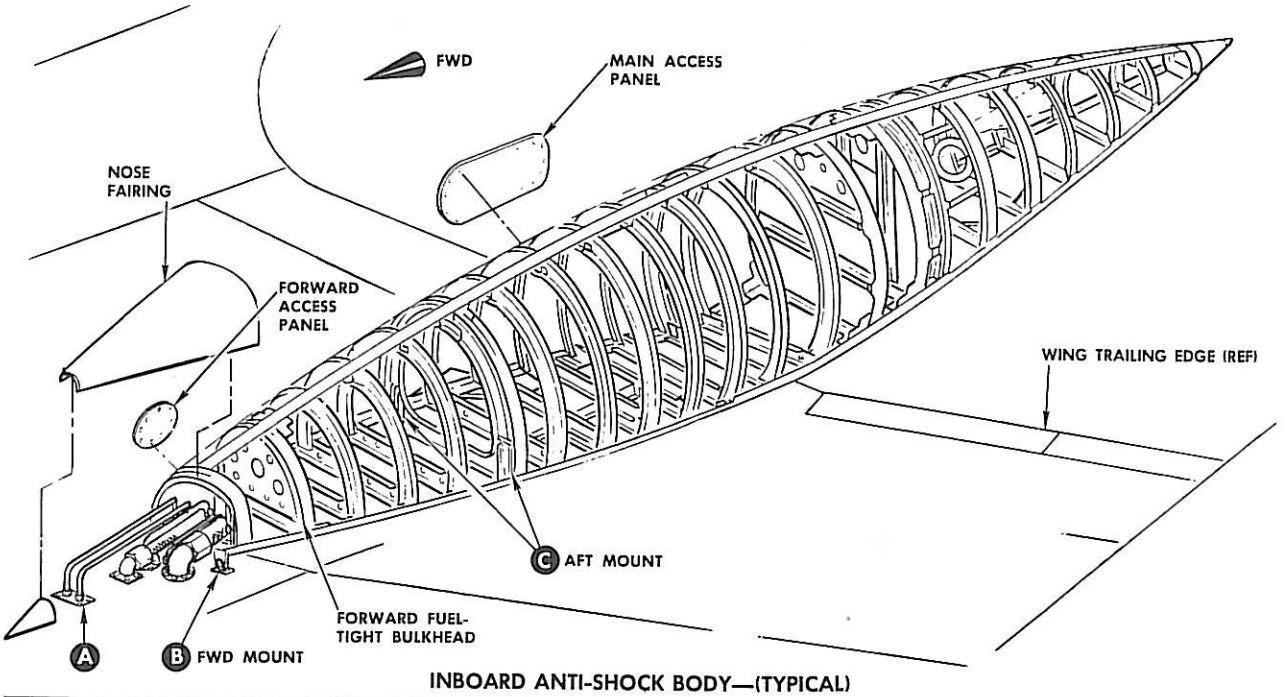
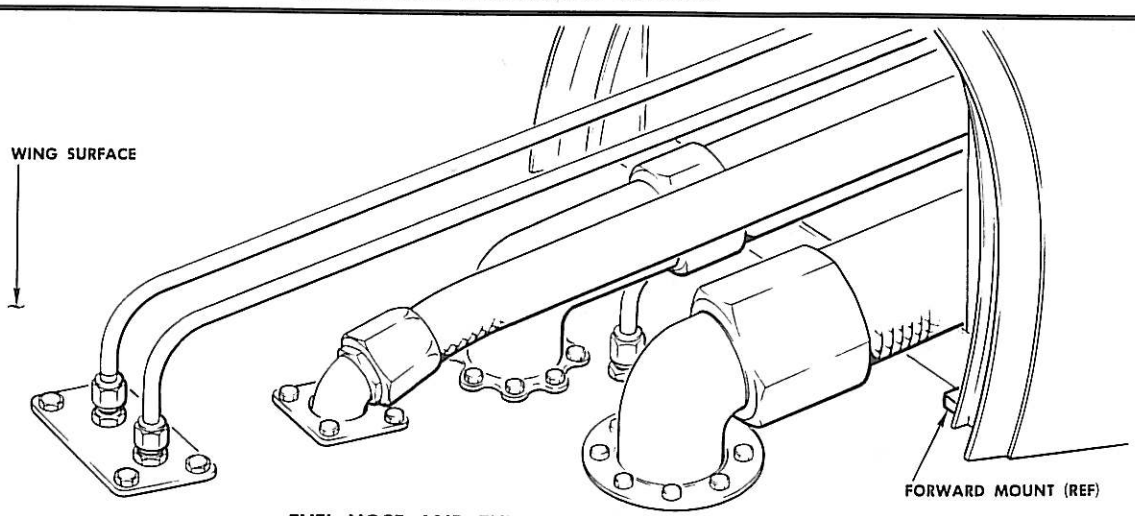


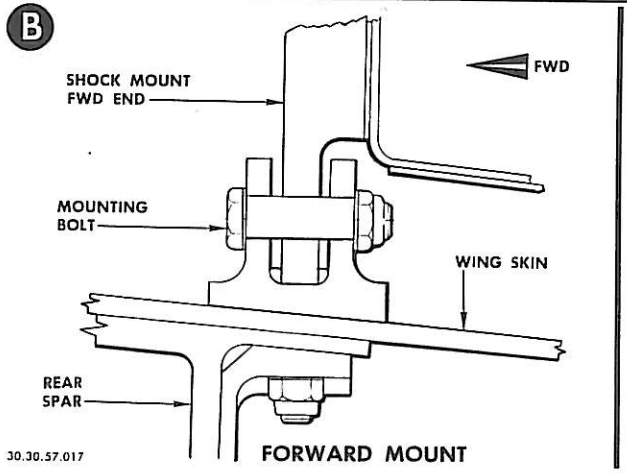
INBOARD ANTI-SHOCK BODY—(TYPICAL)

A



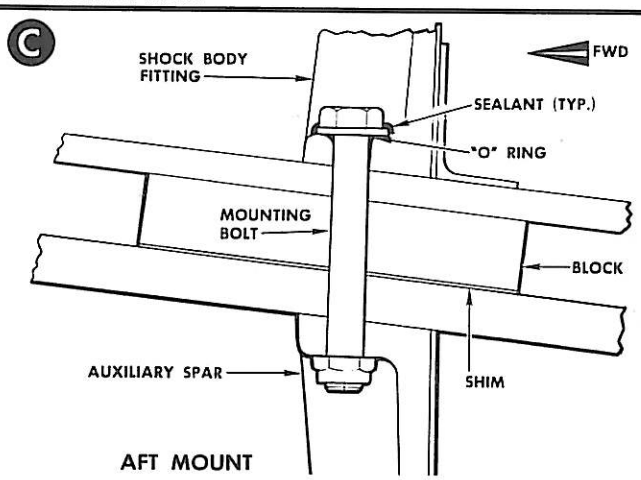
FUEL HOSE AND TUBE INSTALLATION

B



FORWARD MOUNT

C



AFT MOUNT

(3) Remove ASB main access panel for access to fuel tube fittings and bolts connecting ASB to rear spar. (Bag and tag screws for installation.)

(4) Remove No. 6 and 8 wing doors for access to rear spar bolts. (Bag and tag screws for installation.)

(5) Remove all bolts and nuts connecting fuel tubing to wing at ASB diaphragm (Figure 201). (Bag and tag bolts for installation.)

NOTE: Access is through ASB main access panel.

(6) Remove eight bolts attaching ASB to rear spar. (Bag and tag bolts for installation.)

NOTE: Four nuts are accessible under wing on aft side of rear spar. The remaining four nuts, located on the forward side of the rear spar, are accessible through wing doors 6 and 8.

(7) Support ASB with web slings; remove bolt and bushing securing ASB to center spar attach fitting. (Bag and tag bolt and bushing for installation.)

(8) Lift ASB free of wing.

E. Install Outboard Anti-Shock Body.

(1) Inspect ASB to wing seal; replace as necessary.

(2) Position ASB on wing. Install bushing and bolt attaching ASB to wing center spar fitting; apply a fillet of EC 1293 sealing compound to periphery of bolt head after cleaning with aliphatic naphtha.

(3) Install eight bolts attaching ASB to rear spar; apply a fillet of EC 1293 sealing compound to periphery of bolt heads and nuts in fuel tight area after cleaning with aliphatic naphtha.

(4) Install bolts and nuts connecting fuel tubing to wing at ASB diaphragm (Figure 201).

(5) Replace wing doors, ASB access panels, and nose fairing.

(6) Connect electrical leads to ASB.

(7) Raise flaps and close trailing edge access doors.

(8) Close all fuel control circuit breakers on the main circuit breaker panel. (Remove warning sign from circuit breaker panel.)

(9) After refueling per Chapter 12, SERVICING, check for fuel leaks.

F. Remove Inboard Anti-Shock Body.

WARNING: OBSERVE ALL ENTRANCE PRECAUTIONS GIVEN IN CHAPTER 28, FUEL.

(1) Remove main access panel, small forward access panel, and nose fairing from ASB. (Bag and tag screws for installation.)

(2) Disconnect the three fuel hoses and three fuel tubes at wing connection, located on forward end of ASB (Figure 202). (Bag and tag bolts for installation.)

(3) Disconnect electrical leads, located under ASB. (Tag wires for installation.)

(4) Remove four bolts securing ASB to auxiliary spar, located between the trailing edge ribs aft of the flap drive torque tube. (Bag and tag bolts for installation.)

(5) Support ASB with web slings; remove two bolts securing ASB to two fittings attached to upper side of rear spar. (Bag and tag bolts for installation.)

(6) Lift ASB free of airplane.

G. Install Inboard Anti-Shock Body.

(1) Inspect ASB to wing seal; replace as necessary.

(2) Position inboard ASB on wing. Install bolts connecting ASB to two fittings installed on upper side of rear spar.

(3) Install four bolts securing ASB to auxiliary spar. Apply a fillet of EC 1293 sealing compound to periphery of bolt heads after cleaning with aliphatic naphtha.

(4) Connect three fuel hoses and three fuel tubes to wing at forward end of ASB (Figure 202).

(5) Connect electrical leads to ASB under wing trailing edge.

(6) Replace ASB nose fairing and two access panels.

(7) Raise flaps and close trailing edge access doors.

(8) Close all fuel control circuit breakers on the main circuit breaker panel. (Remove warning sign from circuit breaker panel.)

(9) After refueling per Chapter 12, SERVICING, check for fuel leaks.

2. Inspection/Check

A. Access.

Lower flaps and open wing trailing edge access doors in wing lower surface, forward of the flaps.

B. Check the Following:

(1) Anti-shock body seal for condition and security of attachment.

(2) Electrical connectors for condition and security of attachment.

(3) Anti-shock body structure for cracks, corrosion, and loose fasteners.